WALKER
RESTORATION CONSULTANTS

CONSTRUCTION DOCUMENTS

FIRST STREET PARKING FACILITY RESTORATION

ROCHESTER, MINNESOTA

PREPARED FOR

THE CITY OF ROCHESTER

JULY 2015

Walker Commission No. 21-4101.10

PROJECT MANUAL SIGNATURE PAGE

Structural Engineer: Walker Restoration Consultants
1660 South Highway 100, Suite 424
Minneapolis, MN 55416

I hereby certify that these specifications were prepared by me or under my supervision and that I am duly licensed Professional Engineer under the laws of the State of Minnesota.

Carl L. Schneeman No. 46638

SECTION 000110 – TABLE OF CONTENTS

END OF TABLE OF CONTENTS

CITY OF ROCHESTER

NOTICE OF BIDS

Notice is hereby given that bids will be received at the office of the City Clerk until **11:00 A.M. on Tuesday, August 11, 2015** for the following described local improvement, pursuant to Minnesota Statutes, Chapter 429, as amended, in accordance with the plans and specifications for the same which are on file in the Office of the City Clerk of said City.

Title: J2580-15 First Street Parking Facility Restoration 2015

Immediately following expiration of the time for receiving bids, the City Clerk and two designated City officials will publicly open said bids in the City Hall and tabulate them in advance of the Council meeting. The Common Council will consider the bids in the Council/Board Chambers at the Government Center **at 7:00 P.M. on August 17, 2015.**

The General Contract includes providing all materials, labor, equipment, and incidentals necessary to repair deteriorated concrete of structural slabs, columns, and walls; remove and replace sealants; repair/replacement of expansion joints; recoating of traffic bearing membrane system; painting of miscellaneous metals, exterior façade guardrails, snow gates, stair railings, bollards; and miscellaneous construction; all in accordance with the Specifications and Drawings prepared by Walker Restoration Consultants, dated July, 2015. Questions regarding the project should be directed to Mr. Carl Schneeman of Walker Restoration Consultants at 952-595-9116 or email Carl.Schneeman@walkerparking.com

Plan, Specifications and Contract Documents may be examined at the Department of Public Works, 201 4th St. SE, Room 108, Rochester, MN 55904, (507) 328-2400 or the City's website at https://egram.rochestermn.gov/, and at Walker Restoration Consultants, 1660 South Highway 100, Suite 424, Minneapolis, MN 55416.

Each bid must be sealed and accompanied by a cash deposit, bid bond, cashier's check or a certified check payable to the City of Rochester, Minnesota, for at least **5%** the amount of the bid, which amount shall be forfeited to the City of Rochester, Minnesota, as liquidated damages if the bidder, upon the letting of the contract to him shall fail to enter into the contract so let; the Common Council reserving the right to reject any and all bids.

A

ll proposals must be addressed to the City Clerk, City of Rochester, 201 4th St. SE, Room 135, Rochester, Minnesota 55904-3742 and shall have endorsed thereon:

Title: J2580-15 First Street Parking Facility Restoration 2015

Dated at Rochester, Minnesota this **20th[h] day of July, 2015**

_____

Aaron Reeves, City Clerk

SECTION 001116 - INVITATION TO BID AND INSTRUCTIONS TO BIDDER

10.1 PROJECT IDENTIFICATION AND DEFINITIONS

A. Owner will receive sealed Bids for: First Street Parking Facility Restoration.

B. Owner is: The City of Rochester, Minnesota.

C. Engineer/Architect is: WALKER Parking Consultants/Engineers, Inc. of Minneapolis, MN.

D. Project consists of:

1. Project consists of providing all materials, labor, equipment, supervision, and services required to perform repairs in the parking structure in accordance with the Contract Documents.

E. Bids will be due on: August 11, 2015. Submit bids via email no later than 11:00am to:

Owner: City Clerk, City of Rochester
201 4th Street SE, Room 135
Rochester, MN 55904-3742

With email copy to:

Owner: tknauer@rochestermn.gov

and Design Professional: carl.schneeman@walkerparking.com

F. Project Schedule shall be as follows:

1. Notice to Proceed & Award: August 17, 2015
2. Construction Start: August 24, 2015
3. Construction Completion: October 2, 2015

10.2 EXAMINATION OF CONTRACT DOCUMENTS AND SITE

A. Bidders shall carefully examine contract documents and site to obtain first-hand knowledge of existing conditions. No subsequent extras will be allowed due to any claim of lack of knowledge for conditions which can be determined by examining site and contract documents.

B. Extent of repairs is approximately represented on Drawings. Actual locations and extent of repair may deviate from that represented on Drawings based on field conditions.

C. Submission of Bid shall constitute warranty that:

1. Bidder and all Subcontractors it intends to use have carefully and thoroughly reviewed Contract Documents and have found them complete and free from ambiguities and sufficient for purposes intended; further that,
2. Bidder and all workers, employees and Subcontractors it intends to use are skilled and experienced in type of construction represented by Contract Documents bid upon; further that,
3. Neither Bidder nor any of its employees, agents, suppliers or Subcontractors have relied on any verbal representations from Owner, Engineer/Architect, or any of their employees, agents, or consultant, in assembling Bid figure; and further that,
4. Bid figure is based solely on Contract Documents, including properly issued written addenda, and not upon any other written representation.
5. Reference is made to Supplementary Conditions for identification of those reports of investigations and tests of subsurface and latent physical conditions at site or otherwise affecting cost, progress or performance of Work which have been relied upon by Engineer/Architect in preparing Drawings and Specifications. These reports are not guaranteed as to accuracy or completeness, nor are they part of Contract Documents. Before submitting its Bid, each bidder may, at its own expense, make such additional investigations and tests as it may deem necessary to determine its Bid for performance of Work in accordance with time, price and other terms and conditions of Contract Documents.

D. Bidder shall identify, prior to bid, all errors and/or discrepancies in Contract Documents that would be apparent to reasonably diligent Bidder. In no case shall Bidder, if selected as Contractor, be permitted any extra amount of time or money to complete project, or expenses incurred as result of such errors or discrepancies.

10.3 RESOLUTION OF DISCREPANCIES AND AMBIGUITIES

A. All questions about meaning or intent of Contract Documents shall be submitted to Engineer/Architect in writing. Address written inquiries to:

Carl Schneeman
Walker Parking Consultants
952.595.9116
Carl.schneeman@walkerparking.com

Replies will be issued by Addenda mailed or delivered to all parties recorded by Engineer/Architect as having received Contract Documents for Bidding. Questions received less than 5 days prior to date for opening of Bids will not be answered. Only answers contained in formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

B. Any Addendum issued during prebid period shall be included in Bid, shall become part of Contract Documents, and shall be acknowledged on Bid Form.

10.4 SUBSTITUTED MATERIAL AND EQUIPMENT

A. Contract, if awarded, will be on basis of material and equipment described in Drawings or specified in Specifications without consideration of possible substitute or "or-equal"

items. Whenever it is indicated in Drawings or specified in the Specifications that substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer/Architect, application for such acceptance will not be considered by Engineer/Architect until after "effective date of Agreement."

10.5 BASIS FOR BIDS

A. Bids are based on lump sum contract at unit prices. Work Item quantities are based on Engineer/Architect's estimates.

10.6 PREPARATION OF BIDS

A. Bids must be made in form given in this Project Manual. No oral, telephonic or telegraphic Bids will be considered. Bids shall be signed by Bidder giving full name and business address. State whether Bidder is individual, partnership or corporation.

B. Each Bidder shall fill in all blanks on Bid Forms and quote on all alternates required. State all quotations in words and figures. In case of discrepancy between amount stated in words and amount stated in figures, amount stated in words shall govern. Entire Bid shall be without interlineation, alteration or erasure.

C. Bids by corporations shall be executed in corporate name by president, vice-president or other corporate officer (accompanied by evidence of authority to sign) and corporate seal shall be affixed and attested by secretary or assistant secretary. Corporate address and state of incorporation shall be shown below signature.

D. Bids by partnerships shall be executed in partnership name and signed by partner. Partner's title must appear under partner's signature and official address of partnership must be shown below signature.

E. Bids not signed by individuals making them shall have attached thereto power of attorney evidencing authority to sign Bid in name of person for whom it is signed.

F. All names must be typed or printed legibly below signature.

10.7 PERFORMANCE BOND, LABOR AND MATERIAL PAYMENT BOND AND INSURANCE

A. Bidder to whom award is made will be required to furnish Performance and Labor and Material Payment Bonds in accordance with General Conditions. Bidder shall deliver said Bonds to Owner within 15 days after Notice of Award.

B. Bidder shall include premiums for Bonds in its Bid. See Section "Bonds and Certificates" for bond form information. Bonds shall be dated same date as Agreement.

C. Bidder to whom award is made shall be required to furnish Owner with insurance coverages as set forth in General and Supplementary Conditions. Bidder shall include all premiums for insurance in its Bid.

10.8 SUBCONTRACTOR LISTING

A. If Supplementary Conditions require identity of certain Subcontractors and other persons and organizations to be submitted to Owner in advance of Notice of Award, apparent successful Bidder, and any other Bidder so requested, shall within seven days after day of Bid opening submit to Owner list of all Subcontractors and other persons and organizations (including those who are to furnish principal items of material and equipment) proposed for those portions of Work as to which such identification is so required. Such list shall be accompanied by experience statement with pertinent information as to similar projects and other evidence of qualification for each such Subcontractor, person and organization if requested by Owner.

B. If Owner or Engineer/Architect after due investigation has reasonable objection to any proposed Subcontractor, other person or organization, either may request apparent Successful Bidder to submit acceptable substitute before giving Notice of Award. If apparent successful Bidder declines to make any such substitution, contract shall not be awarded to such Bidder, but Bidder's declining to make any such substitution will not constitute grounds for sacrificing its Bid Security. Any Subcontractor, other person or organization so listed and to whom Owner or Engineer/Architect does not make written objection prior to the giving of Notice of Award will be deemed acceptable to Owner and Engineer/Architect.

C. No Contractor shall be required to employ any Subcontractor, other person or organization against whom it has reasonable objection.

10.9 GOVERNING LAWS AND REGULATIONS

A. No Contractor shall discriminate against any employee or applicant for employment, to be employed in performance of contract, with respect to their hire, tenure, terms, conditions or privileges of employment, because of their race, color, religion, gender, national origin or age pursuant to requirements of all applicable federal and state statutes.

B. Each Bidder shall make affidavit that its Bid is genuine and not sham or collusive or made in interests or on behalf of any person not therein named and that Bidder has not directly or indirectly induced or solicited any Bidder to put in sham Bid or any other person or corporation to refrain from Bidding, and that Bidder has not in any manner sought by collusion to secure itself an advantage over other Bidders.

10.10 CONTRACT TIME

A. Time is of essence in performance of Work under this Contract. Available time for Work under this Contract is indicated in Bid Form and will be include in executed Agreement. If these time requirements cannot be met, Bidder is requested to stipulate in Bid schedule for performance of Work. Consideration will be given to time in evaluating Bids.

10.11 AWARD OF CONTRACT

A. Owner reserves right to reject any and all Bids, to waive any and all informalities and to negotiate contract terms with Successful Bidder, and right to disregard all nonconforming, nonresponsive or conditional Bids and to make award in any manner deemed in best interest of Owner. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between indicated sum of any column of figures and correct sum thereof will be resolved in favor of correct sum.

B. In evaluating Bids, Owner shall consider qualifications of Bidders, whether or not Bids comply with prescribed requirements, and alternates and unit prices if requested in Bid Forms.

C. It is Owner's intent to accept alternates (if any are accepted) in order in which they are listed in Bid Form but Owner may accept them in any order or combination.

D. If contract is to be awarded it will be awarded to Bidder whose evaluation by Owner indicates to Owner that award will be in best interests of Project.

10.12 CONTRACT PRICE

A. Proposals are solicited on basis of unit prices and/or lump sum prices which are to be clearly set forth in Bid Form. Final Contract price on accepted Proposal will be determined by multiplying number, or fraction thereof, units of Work actually performed, or labor, material or appliances actually supplied, by price designated for such item in Proposal. Total Bid figure on Proposal Form is merely for purposes of estimating and comparing costs and under no circumstances on unit price contracts does it constitute or imply total Contract price. Refer to Section "Supplementary Conditions" for adjustments due to increases or decreases in actual quantities constructed.

END OF SECTION 001116

NAME OF BIDDER _____

UNIT PRICE WORK ITEMS

Bid shall be comprised of Work Items identified as follows:

SECTION 000410 – UNIT PRICE WORK ITEMS

Work Item	Description	North Parking Facility Unit	Quantity	Unit Cost	Extension
1.1	Project Mobilization	LS	1		
3.1	Floor Repair – Partial Depth / Shallow	SF	315		
3.2	Floor Repair – Partial Depth / Deep	SF	5		
3.4	Floor Repair – Curbs / Walks	EA	25		
6.1	Column Repair – Partial Depth	SF	10		
7.1	Wall Repair – Partial Depth / Shallow	SF	10		
10.5	Expansion Joint Repair – Adhered	LF	25		
11.2	Repair Crack / Joint Sealant	LF	275		
11.3	Repair Vertical Joint Sealant	LS	1		
11.7	Cove Sealant	LF	130		
16.4	Traffic Topping – Recoat (Partial System)	SF	800		
16.5	Traffic Topping – Recoat (Complete System)	SF	250		
35.1	Tuckpointing	LF	26		
35.7	Through Wall Flashing	LS	1		
41.5	Replace Stair Nosing	EA	5		
44.5	Attach Wood Bumper	EA	1		
45.4	Paint Doors and Frames	EA	1		
45.7	Paint Miscellaneous Metals	LS	1		
45.8	Paint Skyway	LS	1		

NAME OF BIDDER _____

List of subcontractors

	COMPANY ADDRESS	CONTACT PERSON NAME PHONE NUMBER FAX NUMBER
Sealants and Caulking		
Expansion Joint Assemblies		
Traffic Topping		
Trowel Applied Mortar		
CIP Concrete		

END OF SECTION 004100

CONTRACT FORMS

SECTION 005000 - AGREEMENT FORM

PART 1 - GENERAL

1.1 Written agreement will be executed on AIA Document A101, "STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR, WHERE THE BASIS OF PAYMENT IS A STIPULATED SUM," 1997 edition, in accordance with General Conditions.

1.2 Copies of agreement form may be obtained from the American Institute of Architects, 1735 New York Avenue, N.W., Washington, DC 20006.

END OF SECTION 005000

SECTION 006000 - BONDS AND CERTIFICATES

PART 1 - GENERAL

1.1 Performance bond and payment bonds shall be executed on AIA Document A312, "Performance Bond and Payment Bond," in accordance with General Conditions.

1.2 Copies of bond forms may be obtained from the American Institute of Architects, 1735 New York Avenue, N.W., Washington, D.C. 20006.

END OF SECTION 006000

CONDITIONS OF THE CONTRACT

SECTION 007000 - GENERAL CONDITIONS

PART 1 - GENERAL

1.1 "General Conditions of the Contract," City of Rochester, Minnesota. Department of Public Services, Section 1001 through Section 1008 inclusive, is hereby made part of Contract Documents. Latest updated documents can be view from the following website: HTTP://DEV6.VISIONINTERNET.COM/ROCHESTERMN6/HOME/SHOWDOCUMENT?ID=2664

1.2 Supplementary Conditions, Section 00800, shall amend or supplement General Conditions. All provisions of general conditions not amended or supplemented by supplementary conditions remain in full force and effect.

END OF SECTION 007000

STANDARD SPECIFICATIONS FOR STREET AND UTILITY CONSTRUCTION

GENERAL CONDITIONS
OF THE CONTRACT

Rochester, MN

TABLE OF CONTENTS

Section 1001 SCOPE

1001.1 Description

The Contract stipulations that follow are general in scope and may refer to conditions that will not be encountered on the work covered by the Contract. Any provision of these general requirements that pertains to a nonexistent condition or is not applicable to the work to be performed here under, or that conflicts with any provision of the Special Provisions or with any special instructions to bidders, shall have no meaning in the Contract and shall be disregarded.

1001.2 Reference Documentation

Reference Documentation shall be the latest edition, including amendments and published updates, issued prior to the date of advertisement for bids or the date of request for quotations, of the following:

1. Minnesota Department of Transportation (Mn/DOT) Standard Specifications for Construction.
2. City of Rochester Ordinances.
3. City of Rochester Standard Detail Plates.

Section 1002 DESIGNATION OF PARTIES

1002.1 "City"

"City" shall mean the City of Rochester, 201 4th Street SE, Room 108, Rochester, MN 55904.

1002.2 "Owner"

"Owner" shall mean the City of Rochester, 201 4th Street SE, Room 108, Rochester, MN 55904 or as named in the contract documents.

1002.3 "Engineer"

"Engineer" shall mean the City Engineer or other authorized representative of the Owner as named in the contract documents.

1002.4 "Inspector"

"Inspector" shall mean the Engineer's authorized representative assigned to make inspections of Contract performance.

1002.5 "Bidder"

"Bidder" shall mean any individual or entity submitting a Proposal for the advertised work.

1002.6 "Contractor"

"Contractor" shall mean the individual or entity designated in the Contract documents to construct the project pursuant to plans and specifications.

1002.7 "Sub-Contractor"

"Sub-Contractor" shall mean the individual or entity acting for or on behalf of the Contractor in performing any part of the Contract.

Section 1003 DEFINITIONS AND TERMS

1003.1 Abbreviations

Wherever these Specifications, the Plans, or other Contract documents use the following abbreviations, these abbreviations have the following meaning:

Agg.....Aggregate
APWA.....American Public Works Association
ASA.....American Standards Association
CB .....Catch Basin
C to C. .....Center to Center
C & G. .....Curb and Gutter
CIP .....Cast Iron Pipe
Const. .....Construct
CL .....Center Line
DIP .....Ductile Iron Pipe
DL .....Deflection Left
DR .....Deflection Right
F & I.....Furnish and Install
FL .....Flow Line
Inpl .....Inplace
Inst.....Install
Inv. ..... Invert
L ..... Length Curve
LV ..... Loose Volume
MH ..... Manhole
MJ .....Mechanical Joint
Mn/DOT.....Minnesota Department of Transportation
NPDES..... National Pollutant Discharge Elimination System
PE.....Plain End
PL..... Property Line
ROW ..... Right-Of-Way
VC .....Vertical Curve

1003.2 Definition of Terms

A. Amount of Contract

For the purpose of awarding the Contract and determining the amount of the Bond, the Contract amount shall be the total amount of the bid.

B. Date of Acceptance

Date of Acceptance shall be the day when final inspection reveals that the work has been completed in strict accordance with the provisions of the Plans and other Contract documents, and with previous inspection documents.

C. Date of Final Acceptance

Date of Final Acceptance shall be a day, at least two (2) years after the Date of Acceptance, at which time the City determines that the work continues to be in strict accordance with the provisions of the Plans and other Contract and inspection documents. The Date of Final Acceptance denotes the termination of Contractor's maintenance obligation.

D. Liquidated Damages

Liquidated damages are the amount prescribed in Mn/DOT Section 1807 to be paid to the Owner, or to be deducted from any payments due or to become due to the Contractor, for each day that work remains uncompleted after expiration of the Contract time as determined and extended in accordance with Mn/DOT Section 1806.

E. "Or Approved Equal" Clause

Whenever in any section of the Contract documents, Plans or Specifications, any article, material or equipment is defined by describing a proprietary product, or by using the name of manufacturer or vendor, the term "or approved equal" if not inserted, shall be implied.

The specific article, material, or equipment mentioned shall be understood as indicating the type, function, minimum standard of design, efficiency, and quality required and shall not be construed in such a manner as to exclude manufactured products of comparable quality, design, and efficiency. The Engineer shall determine the acceptability of articles, materials, or equipment proposed "as equal".

F. Standard Documents

Standard Documents are those that are referred to but not included in the Plans, Specifications and Special Provisions. Standard Documents are available to the public and it is the Contractor's sole responsibility to obtain and understand the requirements of any Standard Documents noted in the Plans, Specifications and Special Provisions. Examples of Standard Documents include but are not limited to:

(a) Bid documents (Advertisement, Information to Bidders, Proposal and Bid Security)
(b) Performance and Payment Bond forms
(c) Project Specifications and Special Provisions
(d) City of Rochester, Minnesota, Department of Public Works documents:
    (1) Standard Specifications for Street and Utility Construction
    (2) Standard Detail Plates
(e) Minnesota Department of Transportation documents:
    (1) Standard Specifications for Construction.
    (2) Standard Plates Manual.
(f) ASTM Material Specifications.

G. Aggregate Base

Aggregate Base shall refer to Mn/DOT Section 3138, Class 2, 5, or 7C. Other recycled aggregates require prior authorization from the Engineer.

H. Expansion Joint Material (Preformed Joint Fillers)

Isolation/expansion material for joints in concrete construction shall refer to Mn/DOT Section 3702, or ASTM D 3575 closed cell expansion joint filler. Other joint materials require prior authorization from the Engineer.

I. New Material

New material shall apply to all manufactured products and conform to requirements of the referenced specifications for the class, kind, type, size, grade, and other details indicated in the Contract. Unless otherwise indicated, all materials furnished by the Contractor shall be new, unused and undamaged. If any options are provided for, as to type, grade, or design of the material, the choice shall be limited as may be stipulated in the Plans, Specifications, or Special Provisions.

The Contractor shall submit in writing a list of materials and suppliers for approval prior to use. Suppliers shall submit a Certificate of Compliance that the materials have been manufactured within 12 months, properly stored to prevent degradation, and have been tested and are in compliance with the specifications.

New material delivered to the project shall show no evidence of prolonged explosure to weather, and shall be free of any defects.

The Engineers decision to reject the materials shall be based on the provisions of this section and is final.

1003.3 Contract Wording

Whenever in these Contract documents the words “As Ordered”, “As Directed”, “As Required”, “As Permitted”, “As Allowed”, or words or phrases of like import are used, it shall be understood that the order, direction, requirement, permission, or allowance of the Owner and Engineer is intended.

Similarly the words “Approved”, “Reasonable”, “Suitable”, “Acceptable”, “Properly”, “Satisfactory”, or words of like effect and import, unless otherwise particularly specified therein, shall mean approved, reasonable, suitable, acceptable, proper, or satisfactory in the judgment of the Owner and Engineer.

Section 1004 BIDDING REQUIREMENTS AND CONDITIONS

1004.1 Preparation of Proposal

The Bidder shall submit his/her proposal on the Bid Form obtained from the City or by a third party employed by the City to prepare and/or supply the Bid Form and other bid documents. The Bid Form will identify the Project and may describe the Work by listing estimated quantities, units of measure, items of work, and Materials to be furnished. The bidder shall specify unit prices, extensions, a total of the extensions and summations, initialing any and all changes made. The bidder must acknowledge receipt of and agree that the proposal is based on all addenda received after receipt of the initial bid packet.

The quantities and unit prices identified on the Bid Forms will be used to develop the bid, and as a basis for establishing partial payment and change order values. Final payment will be based on final unit quantities measured in the field, on the lump sum contract amount, or a combination of both as specified in the bid packet for each project.

All bids must state the price bid for all items listed on the Bid Forms, which price shall include all labor and materials required for the complete execution of the work. All prices must be stated in figures. The unit prices will be considered to be the offer in case of any variation between unit prices and totals stated by the bidder. All amounts and totals will be subject to verification by the City of Rochester.

All bid prices must be clear, legible and must be written in ink or typed. If prices and/or totals are unclear, illegible or written in pencil, the City reserves the right not to read the bid and/or reject it. The place of residence of each bidder must be given after his/her signature, which must be written in full. Two proposals under different names will not be received from one firm or association, and shall be cause for each bid to be rejected.

1004.2 Bid Submittal

The authorized Bid Forms shall be submitted at the time and place specified in the Advertisement for Bids.
In submitting the bid, you must:

1. Return the Bid Form together with the Bid Guaranty and such other documentation as is required, in a sealed envelope to:
   City Clerk,
   City of Rochester,
   201 4th St. SE, Room135,
   Rochester, Minnesota 55904-3742
2. Write the Project title, the name and address of the bidder, and the date of the opening on the sealed envelope.
3. Fill in all blanks in the Schedule of Prices and initial any and all changes made.
4. Acknowledge any and all addenda.
5. Enclose the Proposal Guaranty: submit a bid bond, cashier's check or a certified check payable to the City of Rochester, Minnesota, for at least five (5) percent of the amount of the bid.
6. Visit the Site and become familiar with the general, local and site conditions that may affect cost, progress, and performance of the Work.

If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope, with a notation "BID ENCLOSED" on the face of the envelope. The Bidder shall assume full responsibility for the timely delivery at the location designated in the Advertisement for Bids for receipt of Bids. Bids turned in or received after that time will not be read, and will be returned, unopened.

1004.3 Qualifications of Bidders

BIDDERS may be required to submit satisfactory evidence that they have a practical knowledge of the particular work bid upon, and that they have necessary financial and material resources to complete the proposed work. Such data shall be submitted upon request of the Owner. In determining the responsibility of a particular bidder, the following elements will be considered:

Whether the Bidder:

(a) maintains a permanent place of business;
(b) has adequate equipment and personnel to do work properly and expeditiously within the Contract time;
(c) has suitable financial status to meet obligations incident to the work; and
(d) has appropriate technical experience.

Each Bidder may be required to show that former work performed by Bidder's company has been handled in such a manner that there are no just or proper claims pending against such work. No Bidder will be considered responsible if it is engaged in other work that impairs its ability to finance this Contract or to provide adequate labor and equipment for the proper execution of the work required. Each Bidder shall demonstrate its ability to meet all requirements of the Contract by evidence satisfactory to the City.

1004.4 Proposal Registration

All persons requesting a Proposal will be required to register as a Plan holder and provide the Owner with their name, address, phone number, fax number, and email address (if available). Failure to provide the requested information will relieve the City of any responsibility to provide that Plan holder with any Addenda that may be issued.

1004.5 Bid Security

A certified check, cashiers check or bidders bond in an amount equal to at least five percent (5%) of the total bid amount must accompany each bid as a guarantee that the Bidder will execute the Contract and give a Performance Bond as required if awarded the Contract. The Rochester Home Rule Charter requires this bid security and failure to comply is a material bid defect that may not be waived.

The Bid Security shall be made payable to the City of Rochester, Minnesota.

Upon failure or refusal, on the part of the successful Bidder to enter into the Contract and furnish the necessary Bond within the time specified, the Bid Security shall be forfeited to the City.

1004.6 Written Addenda

Written Addenda is the only method acceptable for changes to the Contract Documents prior to the Bid Date. Verbal comments, statements, or instructions made by any representative of the Owner shall not be considered a part of the Contract Documents. Written Addenda shall be made part of the Contract Documents. The Engineer may either fax, mail or email, the Addenda to all registered Plan holders. The Bidder shall acknowledge receipt of each Addendum on the Bid Form.

1004.7 Additives, Alternates, Deductives

The Engineer reserves the right to arrange the Bid Form with Alternates, Additives, or Deductives. The Bidder shall Bid on all Alternates, Additives, or Deductives set forth in the Bid Form unless otherwise specified in the Project Manual.

Section 1005 AWARD AND EXECUTION OF CONTRACT

1005.1 Payment and Performance Bonds

The successful Bidder, at the time of the execution of the Contract, shall furnish a Payment Bond equal to the Contract amount and a Performance Bond equal to the Contract amount, as required by Minn. Stat. Section 574.26. The bonds shall be issued by sureties satisfactory to the City and authorized to do business in the State of Minnesota.

The Payment Bond and Performance Bond shall guarantee that the Contractor will perform each and every part of the agreement, cover all guarantees called for in these Specifications, including the provisions for maintenance and repair, and insure the prompt payment to all persons furnishing material and labor required in the prosecution of the work. The Performance Bond shall be written in such a manner that it shall remain effective until the Date of Final Acceptance (two (2) years after the Date of Acceptance by the City, provided the work is in accordance with the Specifications and any inspection instructions, and all defects identified during the two (2) year period have been corrected).

In the event the Surety on any Bond furnished by the Contractor is declared bankrupt or becomes insolvent, or its right to do business in Minnesota is terminated, or it otherwise ceases to meet the requirements set forth herein, the Contractor shall, within five days thereafter, substitute another Bond and Surety, both of which shall be subject to Owner's acceptance.

If notice of any change affecting the general scope of the Work or change in the Contract Price is required by the provisions of any Bond to be given to the Surety, it will be the Contractor's responsibility to so notify the Surety, and the amount of each applicable Bond shall be adjusted accordingly. Contractor shall furnish proof of such adjustment to the Owner.

1005.2 Execution of Contract

The Contractor shall not, under any circumstance, assign the Contract or any payments due there under without written permission by the City.

The Contract will be made on the forms used by the City of Rochester, and made a part of the General Requirements and Covenants, copies of which are also on file at the office of the City Clerk, Room 135, City Hall, Rochester, Minnesota.

Section 1006 CONTROL OF WORK

1006.1 Drawing and Specification

The Specifications and Plans are intended to supplement, but not necessarily duplicate each other, and together constitute one complete set of Specifications and Plans so that any work exhibited in the one and not in the other, shall be executed as if it has been set forth in both, in order that the work shall be completed according to the complete design or designs as decided and determined by the Engineer.

Should anything be omitted from the Specifications and Plans that is necessary to a clear understanding of the work, or should it appear various instructions are in conflict, the Contractor shall secure written instructions from the Engineer before proceeding with the construction affected by such omissions or discrepancies. It is understood and agreed that the work shall be performed and completed according to the true spirit, meaning, and intent of the Contract, Plans, and Specifications.

All Drawings, Specifications and copies thereof furnished by the City are its property. They are not to be used on other work and, with the exception of the signed Contract, plan sets are to be returned to the City upon request at the completion of the work.

Contractor shall keep and maintain one complete set of all drawings and specifications, addenda, approved shop drawings, change orders and other modifications at the job site that shall be available to the Engineer at all times.

1006.2 Surveys, Staking and Monument Preservation

The Contractor shall give the Engineer at least 2 working days notice before requiring any stakes to be set or before commencing work on any portion of the Contract, or at any new place, as well as at any place where work has been relinquished or stopped for any reason.

Any work done without being properly located and established by base lines, offset stakes, bench marks, or other basic reference points located, established, or checked by the Engineer, may be ordered removed and replaced at the Contractor's cost and expense.

Contractor shall carefully protect and preserve any permanent monuments or benchmarks that must of necessity be removed or disturbed in the construction of the work, until they can be properly referenced for relocation.

1006.3 Other Contracts and Contractors

The Owner reserves the right to award contracts to other Contractors who do additional work at the site of this Project pursuant to Mn/DOT section 1505.

1006.4 Testing of Completed Work

Before final acceptance, all parts of the work shall be tested and each part shall be in good condition and working order, or shall be placed in such condition and order at the expense of the Contractor. All tests of completed work required under this Contract shall be made under the direction of the Engineer or others so designated and at the expense of the Contractor, who shall repair at its own expense all damage resulting therefrom.

Section 1007 LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

1007.1 Permits, Public Utilities and Code Requirements

The Contractor shall make the necessary arrangements for the use or installation of, and shall pay for, any and all utility service that may be necessary in conducting its work. The Contractor must obtain permission from the City of Rochester Water Department if it is necessary to use City water, and said use of water shall be under the City's direction and supervision. The use of existing private water services adjacent to the work shall be arranged and paid for by the Contractor.

If work is to be performed in State of Minnesota Right-Of-Way, the City shall apply for a "Utilities on Trunk Highway" Permit from the Minnesota Department of Transportation. If work is to be performed in Olmsted County Right-Of-Way, the City shall apply for a Permit from the Olmsted County Highway Division. The Contractor shall not initiate the work prior to receipt of the permit. All regulations and rules contained in this permit shall apply and will be considered a part of the Special Provisions. The Contractor shall furnish a certified check or surety bond in the amount required by and in favor of the State of Minnesota, Commissioner of Transportation.

1007.2 Contractor's Insurance

The Contractor shall not commence work under this Contract until it has obtained and submitted to the City written evidence of all insurance required under this paragraph and such insurance has been approved by the City, nor shall the Contractor allow any sub-Contractor to commence work on its subcontract until all similar insurance required of the sub-Contractor has been obtained and approved.

Compensation Insurance

Worker's Compensation Insurance shall be as required by the laws of the State of Minnesota.

General Liability and Property Damage Insurance.

The Contractor shall take out and maintain during the life of the Contract such General Liability and Property Damage Insurance as shall protect him and any sub-Contractor from claims while performing work covered by this Contract. The certificates of insurance shall indicate that the City is an additional insured. The required amounts of such insurance are as follows:

General Liability, Personal injury and Property damage

1. Injury or death of one person.....$1,500,000
2. Injury to more than one person in a single accident or occurrence $1,500,000
3. Property damage.....$1,500,000
4. Products – Comp/Op Aggregate.....$1,500,000
5. General Aggregate.....$3,000,000

X-C-U Hazards

Same limits as above. Basic exclusions for eXplosions, Collapse, and Underground hazards shall be removed from the policy, and so indicated as covered in the declarations on the certificates of insurance.

Automobile Liability and Property Damage Insurance

The Contractor shall take out and maintain during the life of the Contract, Automobile Liability and Property Damage Insurance on all self-propelled vehicles used in connection with the Contract whether owned, non-owned, or hired site and the amounts of such insurance shall be as follows:

1. Injury or death of one person.....$1,500,000
2. Injury to more than one person in a single accident or occurrence $1,500,000

3. Property damage.....$1,500,000

Satisfactory Coverage

In the event that the form of any policy or certificates or the amount of the insurance is not satisfactory to the City, the Contractor shall secure other policies or certificates in a form and amount satisfactory to the City.

The Contractor shall not cause any policies to be canceled or permit them to lapse, and all insurance policies shall include a clause to the effect that the policy shall not be canceled or changed until 30 days after the City has received written notice as evidenced by the return receipt of registered letter.

Proof of Carriage of Insurance

Written evidence of insurance shall contain true transcripts from the policy, authenticated by the proper officer of the, insurer, evidencing in particular those insured, the extent of the insurance, the location and operations to which the insurance applies, the effective date and expiration date and the notice of cancellation clause mentioned herein above.

The Contractor shall comply with all federal, state, and local laws and ordinances applicable to the work to be done under this agreement. The Contractor shall defend, save and hold harmless the City of Rochester and its officers, agents, employees, and members, from all claims, suits, or actions of whatsoever nature resulting from or arising out of the activities of the Contractor or its subcontractors, agents, or employees under the Contract.

1007.3 Mediation

The resolution of any dispute, controversy or claim arising out of or relating to this Contract or the relationship between the parties shall first be attempted through a mediation process. Such mediation shall be conducted in the City of Rochester, Minnesota, or such other location as the parties may mutually agree. The parties shall share the mediator's fee equally. The mediation shall be conducted by a mediator mutually agreed upon between the parties. If the parties are unable to agree upon a single mediator within thirty days after one party has delivered written notice to the other party requesting mediation of a stated dispute, each party shall select one mediator and the selected mediator shall select a third mediator who alone shall attempt resolution of the dispute. Either party may take action in Olmsted District Court should mediation not result in a resolution of the dispute.

1007.4 Use of Explosives

The Contractor shall obtain a User Permit from the Chief of Police for the City of Rochester prior to the transporting, storage or use of explosives, and shall comply with all conditions imposed therein.

1007.5 Noise Control

The Contractor shall comply with the requirements of Chapter 85, Section 85.10 of the Rochester Code of Ordinances:

"Noises Prohibited.

Subdivision 1 Unnecessary Noises Generally. No person shall make, continue, or cause to be made or continued any loud, unnecessary or unusual noise which unreasonably annoys, disturbs, injures or endangers the comfort, convenience, safety, health, welfare or repose of persons in the vicinity thereof, unless the making, continuing, or causing to be made or continued of such noise cannot be prevented and is necessary for the protection or preservation of property or of the health, safety, life or limb of some person.

Subdivision 2 Construction or Repair of Buildings, or Construction work.

a) The erection (including excavation), demolition, alteration or repair of any building requiring a building permit or the performance of any construction work occurring between the hours of 10:00p.m. and 7:00 a.m. on Monday through Saturday, from 10:00 p.m. Saturday through 12:00 p.m. Sunday, and from 10:00 p.m. Sunday through 7:00 a.m. Monday is a violation of this section. For purposes of this section, "construction work" shall mean any and all activity incidental to the erection of buildings, structures, roads, flood control facilities, or appurtenances thereto, including land clearing, grading, excavating, and filling.

b) Notwithstanding this section, a permit may be obtained to allow construction work to occur during the prohibited hours described in (a) in cases of urgent necessity in the interest of public health and safety. The permit shall be granted for a period not to exceed three days, shall continue only so long as the necessity continues, and may be extended for periods of three days or less so long as the necessity continues.

c) Notwithstanding this section, a permit may be obtained to allow construction work to occur during the prohibited hours described in (a) if it is determined that the public health and safety is not impaired by the erection, demolition, alteration, or repair of any building, or the performance of construction work occurring during such hours, and further determines that loss or inconvenience would result to any party in interest. Application for a permit may be made at the time the permit for the work is awarded or during the progress of the work.

d) The permits described in (b) and (c) shall be issued by the building inspector in cases involving a building for which a building permit is required. In all other cases, the permit shall be issued by the city engineer."

Section 1008 MEASUREMENT & PAYMENT

1008.1 Partial Payment

Unless the terms of the contract provide otherwise, progress payments shall be made monthly as the work progresses. Payments shall be based upon estimates of work completed as approved by the City. A progress payment shall not be considered acceptance or approval of any work or waiver of any defects therein.

The City may reserve as retainage from any progress payment an amount not to exceed five percent of the payment. The City may reduce the amount of the retainage and may eliminate retainage on any monthly contract payment if, in the City's opinion, the work is progressing satisfactorily.

For further details refer to Mn/DOT specification 1906 “Partial Payments”.

1008.2 Acceptance and Final Payment

When final inspection reveals that the work has been completed in strict accordance with the provisions of the Plans, other Contract documents, and previous inspection instructions, the Engineer shall, within ninety (90) days thereafter, prepare a final estimate which shall be based on accurate measurements of all work performed, and shall submit such estimate together with recommendations to the City Council of the City of Rochester for approval. Payment shall then be made for all work performed under the Contract, less any partial payments already made and any legal deductions or forfeitures for the satisfaction of liens or other claims against the Contract.

1008.3 Correction of Work After Final Payment

Neither acceptance and occupancy by the Owner, final payment, nor any other provision in the Contract documents, shall relieve the Contractor of its maintenance obligation as hereinafter set forth and as identified in the Specifications.

1008.4 Maintenance and Repair

The Contractor shall guarantee all work relating to the Specifications for a period of at least two (2) years from the date of written acceptance of the work or project. The Contractor shall make all needed repairs arising out of defective workmanship or materials that, in the judgment of the City, become necessary during such period. Final acceptance and termination of the maintenance obligation shall occur on the date two (2) years after initial acceptance provided that the work is in accordance with the Specifications and any inspection instructions. The maintenance obligation shall otherwise continue until all defects, including defective equipment installed therein, have been corrected.

At any time prior to Final Acceptance (the time during which the maintenance obligation is in effect as provided herein) the City may demand that the Contractor make any noted repairs. If Contractor fails to undertake repairs within ten days after the mailing of a notice of the need to make such repairs, the City may either take action against the performance bond or make the repairs itself and recover the cost from Contractor or the surety under the performance bond.

SECTION 010000 – ADMINISTRATIVE REQUIREMENTS

1.1 CONTRACTUAL

A. Project consists of providing all materials, labor, equipment, supervision and services to perform repairs for the First Street Parking Facility located in Rochester, Minnesota.

B. Contractor shall perform the work in accordance with the Owner provided executed contract with the Owner and these Contract Documents.

1.2 PROJECT MANAGEMENT AND COORDINATION

A. Coordinate construction to ensure efficient and orderly installation of each part of the Work.

B. Conduct progress meetings at Project site at Owners request. Contractor, Owner and Engineer to agree on meeting dates and times. Require attendance of each subcontractor, major supplier or other entity concerned with current progress or involved with planning or coordination of future activities. Contractor shall record minutes and distribute to parties involved, including Owner and Engineer, within 3 working days of the meeting.

1.3 SUBMITTAL PROCEDURES

A. Shop Drawings: Submit Project-specific information drawn to scale. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

1. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
2. Engineer will not accept submittals from sources other than Contractor.
3. Engineer will not accept submittals without review and stamp by the Contractor
4. Identify deviations from the Contract Documents.
5. Submit 3 copies of each submittal.

1.4 QUALITY REQUIREMENTS

A. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements. Contractor is responsible for scheduling inspections and tests and notifying testing agency.

B. Testing Agency: Owner shall arrange and pay for testing and inspection services. Testing Agency to be pre-approved by Engineer.

C. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to, the following:

1. Building Code requirements.
2. Health and safety regulations (OSHA, ANSI)
3. Utility company regulations.
4. Police, Fire Department and Rescue Squad rules.

D. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.5 TEMPORARY FACILITIES AND CONTROLS

A. Use Charges: Contractor shall pay use charges for temporary utilities.

B. Provide field offices, storage trailers, and other support facilities as necessary for the Work.

C. Collect waste daily and, when containers are full, legally dispose of waste off-site.

D. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.

E. Barricades, Warning Signs and Lights: Comply with industry standards, code requirements and applicable laws and regulations of the authorities having jurisdiction. Paint with appropriate colors, graphic signs to inform personnel and public of hazard being protected against. When appropriate and needed provide lighting, including warning lights.

F. Provide temporary environmental controls as required by authorities having jurisdiction including, but not limited to, erosion and sediment control, dust control, noise control, and pollution control.

G. Heating and Cooling: Provide temporary enclosures and heating and cooling required for curing materials or for protecting installed construction from adverse weather. Use equipment that will not have a harmful effect on workers, completed installations or elements being installed. Direct equipment exhaust away from building air intake locations.

H. Provide temporary fire protection. Comply with NFPA 241.

1.6 PRODUCT REQUIREMENTS

A. Provide products of same kind from a single source. The term "product" includes the terms "material," "equipment," "system," and similar terms.

B. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

C. Provide products that comply with the Contract Documents, are undamaged, and are new at the time of installation.

1. Provide products complete with accessories, trim, finish, and other devices and components needed for a complete installation and the intended use and effect.

D. Select products to comply with all of the following that are applicable:

1. Where only a single product or manufacturer is named, provide the item indicated. No substitutions will be permitted.

2. Where two or more products or manufacturers are named, provide one of the items indicated. No substitutions will be permitted.
3. Where products are specified by name, accompanied by the term "available products" or "available manufacturers," provide one of the named items or comply with provisions for "comparable product" to obtain approval for use of an unnamed product or manufacturer.

1.7 SELECTIVE DEMOLITION REQUIREMENTS

A. Unless otherwise indicated, demolished materials become Contractor's property. Remove and dispose of legally from Project site. Do not burn demolished materials.

B. Items indicated to be removed and salvaged remain Owner's property. Remove, clean, and deliver to Owner's designated storage area.

C. Comply with EPA regulations and disposal regulations of authorities having jurisdiction.

D. Conduct demolition without disrupting Owner's use of the building.

E. It is not expected that hazardous materials will be encountered in the Work. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner. Hazardous materials will be removed by Owner.

F. Maintain and protect existing utilities to remain in service before proceeding with demolition, providing bypass connections to other parts of the building.

G. Locate, identify, shut off, disconnect, and cap off utility services to be demolished.

H. Conduct demolition operations and remove debris to prevent injury to people and damage to adjacent buildings and site improvements.

I. Provide and maintain shoring, bracing, or structural support to preserve building stability and prevent movement, settlement, or collapse.

J. Protect building structure and interior from weather and water leakage and damage.

K. Protect walls, ceilings, floors, and exposed finishes that are to remain. Erect and maintain full height dustproof partitions. Cover and protect fixtures, furnishings, and equipment that are to remain.

L. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.

M. Promptly patch and repair holes and damaged surfaces of building caused by demolition. Restore exposed finishes of patched areas and extend finish restoration into remaining adjoining construction.

END OF SECTION 010000

SECTION 011110 - SUMMARY OF WORK FOR RESTORATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Owner provided Contract, including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 PROJECT DESCRIPTION

A. Work will be performed at locations as shown on Drawings.

B. Work required in these areas and estimated quantities are listed on Bid Form. Bid Quantities associated with Work Items listed on Drawings have been estimated and are subject to measurement as defined in Article "Measurements." Where additional Work Items are described, but not specifically located and/or shown on Drawings, Contractor shall be responsible for locating and marking areas to be repaired. Owner and/or Engineer reserves right to increase or decrease quantities up to 25% at same unit cost, as required by job conditions.

C. Work Item specifications and details shall govern all repair operations. Locations where Work Items apply are shown on Drawings as symbols.

D. Final payment shall be made on basis of actual approved Work performed as measured in place.

E. Project consists of concrete and waterproofing repairs to this ramp. The waterproofing repairs include concrete repairs, waterproofing, floor drainage and flange connection work.

1.3 MEASUREMENTS

A. Before ordering any material or doing any Work, Contractor shall verify all measurements at Project site and shall be responsible for correctness of same.

B. Before proceeding with each Work Item, Contractor shall locate, mark, and measure quantity of each item and report quantities to Engineer. If measured quantities exceed Engineer's estimate, Contractor shall obtain written authorization to proceed from Owner before executing Work required for that Work Item.

C. Measurement of quantities for individual Work Items will be performed by Contractor and reviewed by Engineer. Coordinate measurements with Engineer’s site inspection.

D. Cost of Work included in each Work Item for quantities as indicated in Contract Documents shall be included in Base Bid.

1. Additions to or deductions from lump sum price for quantities of each Work Item added to or deducted from Work respectively shall be at unit prices indicated in Bid Form and shall constitute payment for additions or deductions in full for all

material, equipment, labor, supervision and incidentals necessary to complete Work.

1.4 WORK SEQUENCE

A. Prior to commencement of work, meet with Engineer and Owner representatives to establish sequence and schedule of Work.

B. Contractor shall notify Owner's representative at least 24 hr prior to beginning any abrasive blasting operations.

C. Contractor shall remove all broken concrete and debris from Work area on daily basis and dispose of same at authorized dump sites.

D. Contractor shall remove dust and air transported sand/debris from remainder of facility at conclusion of operations in Work area.

E. Contractor shall abide by all City noise and Work ordinances.

1.5 CONTRACTOR USE OF PREMISES

A. General: Limit use of premises to construction activities in areas indicated; allow for Owner occupancy.

1. Coordinate with Owner. Maximum number of spaces to be out of service at any time shall be 100 parking spaces. Traffic coating and other work shall be staged to permit facility to remain open.

2. Keep entrances and exits serving parking available to the Owner and patrons during normal working hours 7:00 AM to 7:00 PM.

3. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

B. Contractor's use of premises shall not interfere with operation of same. Elevator shall not be used for transfer of materials or equipment.

C. Contractor's debris removal path shall be over non-repaired services unless physical restraints prevent use of such path. Protect repaired surfaces from damage or staining following repairs prior to completion.

D. Contractor shall confine its apparatus, materials, equipment, tool cribs, field offices and operations to areas designated by Owner and/or Engineer. Premises shall not be unreasonably encumbered with materials and equipment. Neat and orderly stockpiling and other operations shall be maintained and debris shall be regularly removed from site. Contractor shall not load or permit any part of structure to be loaded with weight that will endanger structural integrity or safety of facility. Contractor shall limit axle loads to maximum 4000 lb per axle and gross weight of 8000 lb, or stockpiling of materials and equipment to 50 lb per sq ft. Contractor to note existing height restrictions.

E. On-Site Storage: Contractor shall not store materials or equipment at site of Work for more than one week prior to time that materials or equipment are incorporated into Work.

F. Contractor Parking: Coordinate Contractor employees parking on site with Owner.

1.6 BARRICADES

A. Contractor will provide barricading and signage to separate Work areas from areas open to public. Provide directional signage and signage at entry and exit lanes as needed. Coordinate barricading and signage with Owner.

B. Contractor is responsible for:

1. Safety requirements for temporary floor holes, wall openings, stairways and other unprotected edges. Refer to local, state and federal requirements.
2. Provide positive protection to separate Work areas from areas open to public to prevent need for washing cars adjacent to work area. Provide additional barriers as required to prevent damage to vehicle due to airborne debris.

1.7 TRAFFIC OFFICERS AND FLAGMEN

A. When, in Owner's opinion, it is necessary that uniformed police or security officers be used to protect and control pedestrian traffic, to direct vehicular traffic during construction and to keep traffic off any part of Work, or to protect public safety, a police/security detail will be provided by Owner.

1.8 CLAIMS

A. Contractor by shall promptly address all damages claims. Owner reserves right to resolve any claims not addressed Contractor within 3 weeks after claim is received by Contractor. Any amounts paid by Owner will be deducted from Contractor's next progress payment.

END OF SECTION 011110

SECTION 020010 - WORK ITEMS

PART 1 - GENERAL

RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

B. Owner has a budget and reserves right to increase or decrease quantities, and add or delete work to maintain budget.

C. WORK SCOPE DEFINITION: Specification Section 020010 defines scope of work, references details, materials specification, and execution of work to be completed by a restoration contractor specializing in parking structure restoration. Work Items are identified on Drawings. Specification Section 011110 is a summary of restoration work.

D. DRAWINGS are provided in this Specification. Work Item designations on plans are associated with those contained within this specification section. Not all areas of work may be identified, but are to be located and quantified by Contractor and confirmed by Owner's representative. Receive written approval before proceeding with repairs.

E. WORK ITEM QUANTITIES are estimated and shall be located, marked and quantified by Contractor and confirmed by Owner's representative. Contractor is responsible for determining actual extent and location of repair areas. Prior to fabrication of material or removal of concrete, contractor shall chain drag entire floor surface, mark and quantify and submit for Owner's representative review. Refer to Section 011110, "Work Sequence." Receive written approval of Owner's representative prior to beginning work and/or ordering materials. Refer to Section 011110, "Measurements." Work completed beyond approved quantities is at no cost to Owner. No payment will be allowed for Work executed prior to Owner's representative inspection and verification.

F. WORK SITE PROTECTION: Vehicle and pedestrian protection around and inside project site are required since they are to remain in service throughout construction. Furnishing and install overhead protection, and fencing at all vehicle and pedestrian entrances and exits, and wall opening protection to contain debris in repair areas to eliminate damage to property and injury to pedestrians is contractor's responsibility.

G. SITE SAFETY, protection and barricading are contractor's responsibility. Contractor shall provide positive protection for all pedestrians and vehicles. See also Specification Section 011110 "Barricades."

H. MISCELLANEOUS ITEMS (example: mechanical, electrical, plumbing, threshold, signs, etc.) that are within / adjacent to repair area shall be removed and replaced as incidental to affected Work Item. Contractor shall review all existing conditions to determine items affected by repair work. Make necessary temporary connections to maintain existing services/equipment to all areas of parking facility, and other areas affected by work. Contractor shall submit methods and schedule of temporary connections for Owner approval prior to commencement.

I. CAUTION: Precast beams and tee stems have prestressing tendons. These tendons may be near surface at spalls and delaminations. Contractor shall use extreme caution when crack routing, saw cutting and removing concrete as not to damage existing tendons. Tendons will break with explosive force when cut. Contractor repair of damage shall be at no cost to Owner. Repair procedures shall be approved by Engineer prior to beginning Work.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

WI 1.0 GENERAL REQUIREMENTS

A. Scope of Work

1. Work consists of performing all tasks, specifically required and incidental, which are not identified under separate Work Item designation, but necessary to perform the work identified in this project. This work includes, but is not limited to the following items:

WI 1.1 - Mobilization
WI 1.2 - Concrete Formwork
WI 1.3 - Concrete Shores and Reshores
WI 1.4 - Concrete Reinforcement
WI 1.5 - Temporary Signage
WI 1.11 - Supplemental Anchors
WI 1.12 - Supplemental Adhesive Anchors
WI 1.13 - Supplemental Reinforcement
WI 1.14 - Supplemental Anchor Pin

WI 1.1 PROJECT MOBILIZATION

A. Scope of Work

1. Work consists of coordinating, scheduling, obtaining and assembling at construction site all equipment, materials, permits, supplies, manpower and other essentials and incidentals necessary to perform Work defined in this Contract. Payment of lump sum amount for mobilization shall be according to following schedule and shall be based on percentage of original contract amount earned.

B. Materials

1. None

C. Execution

1. At execution of agreement by all parties, payment of not more than 25% of mobilization lump sum amount.
2. When amount earned is greater than 10% but less than 25% of original contract amount, an additional amount will be paid to bring total payment for mobilization to 50% of mobilization lump sum amount.
3. When amount earned is equal to or greater than 25% but less than 50% of original contract amount, an additional amount will be paid to bring total payment for mobilization to 75% of mobilization lump sum amount.
4. When amount earned is equal to or greater than 50% of original contract amount, an additional amount will be paid to bring total payment for mobilization to 100% of mobilization lump sum amount.

WI 1.2 CONCRETE FORMWORK

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision, and incidentals necessary to install shoring and formwork as required for cast-in-place concrete.

B. Materials

1. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on Drawings.

    a. Use overlaid plywood complying with U.S. Product Standard PS-1 "A-C or B-B High Density Overlaid Concrete Form," Class I
    b. Use plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood," Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

2. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.
3. Form Coatings: Provide commercial formulation form-coating compounds with a maximum VOC of 350 mg/l that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces, including but not limited to water-curing, curing compound, stains, or paints.
4. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units that will leave no metal closer than 1.5 in. to exposed surface.

    a. Provide ties that, when removed, will leave holes not larger than 1.0 in. diameter in concrete surface.

5. Shores:

    a. Nail Ellis clamps, if used with wood shores, to shores with minimum of two nails to prevent slipping.
    b. Wedges: Hardwood or steel. Softwood wedges prohibited.

C. Execution

1. Work shall conform to requirements of ACI 301 “Standard Specifications for Structural Concrete,” ACI 302.1 R “Guide for Concrete Floor Slab Construction,” ACI 318 “Building Code Requirements for Reinforced Concrete,” and ACI 347 “Recommended Practice for Concrete Formwork” except as modified by the following paragraphs.
2. Store all formwork and formwork materials clear of ground, protected, so as to preclude damage.

3. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent leakage of cement paste.
4. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
5. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
6. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
7. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
8. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is placed. Retighten forms and bracing before concrete placement as required to prevent mortar leaks and maintain proper alignment.
9. Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strips by use of strike-off templates or accepted compacting type screeds
10. Coat contact surfaces of forms with accepted, nonresidual, low-VOC form-coating compound before reinforcement is placed.
11. Coat steel forms with non-staining, rust-preventive form oil or otherwise protect against rusting. Rust-stained steel formwork not acceptable.
12. For post-tensioned concrete, formwork shall remain in place until post-tensioning has been completed. Do not place additional loads on structure until concrete has been properly reshored.
13. For non-post-tensioned concrete, formwork shall remain in place until concrete has reached minimum two-thirds of 28-day strength. Do not place additional loads on structure until concrete has been properly reshored.
14. Clean and repair surfaces of forms to be re-used in Work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.
15. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Engineer.

WI 1.3 CONCRETE SHORES AND RESHORES

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision, and incidentals necessary to install temporary shoring and to maintain shores in place until restoration Work requiring shores and associated concrete has properly cured.

B. Materials

1. Shores shall be steel, rated at a minimum allowable load of 4,500 lb at 12 ft. extension or steel shoring towers rated at a minimum allowable load of 40,000 lbs. per four leg tower (based on two 20,000 lb crossed braced frames.).

C. Execution

1. Comply with ACI 301 and ACI 347 for shoring and reshoring in multi-story construction, except as modified in this Section.
2. For purpose of calculations: Construction Load = 50 psf; Dead Load = 75 psf for the floor slab plus the dead load of beams and girders.
3. Shore/Reshore loads on the structure shall not exceed 40 psf distributed load on the slab, and concentrated loads shall not exceed posted wheel loads or 2,000 lbs., whichever is less. Concentrated bearing pressures shall not exceed 1,200 psi.
4. Shore/Reshore loads on concrete slab-on-grade shall be distributed by steel grillage or timber grillage so as not to exceed soil bearing capacity or 1,500 psf, whichever is smaller.
5. Shore/Reshore loads on asphalt slab-on-grade shall be distributed by steel grillage so as not to exceed asphalt/soil bearing capacity, with consideration of reduced asphalt bearing capacity during extreme hot weather.
6. Shore/Reshore loads shall be distributed horizontally and/or distributed to more than one level to meet shore/reshore load limitations.
7. Shore/Reshore loads shall be distributed to multiple framing members (beams/joists/double tee stems) and extend beyond the immediate work area to ensure proper distribution of loads throughout the structure.
8. Prior to installation of shores, Contractor shall submit shoring scheme prepared and sealed by registered Professional Engineer in state this project is located.
9. Engineer will review shoring scheme for general conformance to requirements stated herein. If it does not conform, Contractor will be informed to resubmit another shoring scheme.
10. Remove shores and reshore in planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to safely support Work without excessive stress or deflection.
11. Keep reshores in place as required until heavy loads due to construction operations have been removed.
12. If during construction, modifications are necessary to accommodate other trades, revise and resubmit erection plan to Engineer for review.

WI 1.4 CONCRETE REINFORCEMENT

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision, and incidentals necessary to fabricate and install all mild steel reinforcement and epoxy coated reinforcement.

B. Materials

1. Reinforcement materials shall be as specified in ACI 301 “Standard Specifications for Structural Concrete.”
2. Welded wire reinforcement: provide mats only. Roll stock prohibited.
3. Epoxy Coating Materials for Reinforcement: ASTM A775 and A884:
4. Supplier shall be certified currently under CRSI Fusion Bonded Epoxy Coating Applicator Plant Certification Program.
5. Provide one of following epoxy coatings for reinforcement and steel accessories as noted on the Drawings:

    a. “Scotchkote 413,” by 3M Company, St. Paul, MN.
    b. "Nap-Gard 7-2719,” by DuPont Powder Coatings, USA, Inc.

6. Use patching material recommended by epoxy powder manufacturer, compatible with epoxy coating and inert in concrete. Acceptable materials are as follows:

    a. “Scotchkote 413/215,” by 3M Company, St. Paul, MN.
    b. “MasterEmaco P124,” by BASF Building Systems, Shakopee, MN.
    c. “Duralprep AC,” by The Euclid Chemical Company, Cleveland, OH.
    d. “Sika Armatec 110 EpoCem,” by Sika Corporation, Lyndhurst NJ.

7. Corrosion Inhibiting Coating for Existing Exposed Non-prestressed Steel Reinforcement or Welded wire reinforcement:

    a. “MasterEmaco ADH 326,” by BASF Building Systems, Shakopee, MN.
    b. “Euco 452”, or “Duralcrete Series” by The Euclid Chemical Company, Cleveland, OH.
    c. “Sikadur 32 Hi-Mod LPL," by Sika Corporation, Lyndhurst, NJ.
    d. “Sika Armatec 110 EpoCem,” by Sika Corporation, Lyndhurst NJ.

C. Execution

1. Work shall conform to requirements of ACI 301 “Standard Specifications for Structural Concrete,” ACI 315-80 “Details and Detailing of Concrete Reinforcement,” ACI 318 “Building Code Requirements for Reinforced Concrete,” and Concrete Reinforcing Steel Institute (CRSI), “Manual of Standard Practice.”
2. Submittals required include: Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, and others as requested by Engineer including, but not limited to:

    a. Manufacturer's product data and installation instructions for proprietary form coatings, manufactured form systems, ties, and accessories.
    b. Steel producer's certificates of mill analysis, tensile tests, and bend tests.

c. Manufacturer's product data, specifications, and installation instructions for proprietary materials, welded and mechanical splices, and reinforcement accessories.
d. Corrosion Inhibitor for Reinforcement:

1) Written certification from coating manufacturer that coating resin for reinforcement has been approved by National Bureau of Standards.
2) Written information from coating manufacturer on proper use and application of coating resin.
3) Coating applicator's written certification of results of quality control program.

e. Submit all materials and methods for concrete curing to Engineer for approval before beginning concreting Work. Include certification of curing compound allowable moisture loss.

3. Store concrete reinforcement materials at site to prevent damage and accumulation of dirt or excessive rust.
4. Epoxy Coated Reinforcement:

a. Contact areas of handling and hoisting systems shall be padded or be made of nylon or other acceptable material.
b. Use spreader bars to lift bundles of coated steel to prevent bar-to-bar abrasion.
c. Pad bundling bands or fabricate of nylon or other acceptable material.
d. Store coated steel on padded or wooden cribbing.
e. Do not drag coated steel members.
f. After placement, restrict traffic on coated steel to prevent damage.

5. Reinforcement with any of following defects will be rejected:

a. Lengths, depths and bends exceeding CRSI fabrication tolerances.
b. Bends or kinks not indicated on Drawings or final Shop Drawings.
c. Reduced cross-section due to excessive rusting or other cause.

6. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports and as herein specified.

a. Avoiding cutting or puncturing vapor retarder during reinforcement placement and concreting operations.
b. Examine conditions under which concrete reinforcement is to be placed, and immediately notify Engineer in writing of unsatisfactory conditions. Do not proceed with Work until unsatisfactory conditions have been corrected in acceptable manner.
c. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.
d. Fabricate reinforcement to conform to required shapes and dimensions, with fabrication tolerances complying with CRSI MSP. In case of fabricating errors, do not re-bend or straighten reinforcement in manner that will injure or weaken material.
e. Bends in reinforcement are standard 90° bends unless noted otherwise.
f. Reinforcement with any of following defects will be rejected:

1) Lengths, depths and bends exceeding CRSI fabrication tolerances.
2) Bends or kinks not indicated on Drawings or final Shop Drawings.
3) Reduced cross-section due to excessive rusting or other cause.

g. Perform all welding of mild steel reinforcement, metal inserts and connections with low hydrogen welding electrodes in accordance with AWS D1.4.
h. Epoxy coated reinforcement: Fabricator and applicator to provide installer with written instructions to handle, store and place epoxy coated reinforcement to prevent damage to coating.
i. Comply with ACI 301, Chapter 3 for placing reinforcement.
j. Use rebar chairs and accessories to hold all reinforcing positively in place. Provide rebar chairs at all formed surfaces, both vertical and horizontal, to maintain minimum specified cover. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces. Maximum spacing of chairs and accessories shall be per CRSI Manual of Standard Practice. In situations not covered by CRSI, provide support at 4 ft. on center maximum each way.
k. Install welded wire reinforcement in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
l. Splices:

1) Provide standard reinforcement splices by lapping ends, placing bars in contact, and tying tightly with wire. Comply with requirements of ACI 318 for minimum lap of spliced bars.
2) For mechanical tension splices of reinforcement:

a) Column bar lengths shall not exceed 30 ft. between splices. In any bar, no splices shall occur at any floor level.
b) Exercise care to assure that no reduction of cross-sectional area of reinforcement occurs.
c) Use Barsplice Products, Inc., Bar-Grip or Grip-Twist, NMB Splice Sleeve, or Erico LENTON splices.
d) For all mechanical splices, perform splicing in strict accordance with manufacturer's requirements and instructions.
e) All splices to develop 125% of specified yield strength of bars, or of smaller bar in transition splices.
f) Stagger splices in adjacent bars.
g) Except where shown on Drawings, welding of reinforcement prohibited without prior written authorization by Engineer.

3) Compression splices: Mechanically coupled splices in accordance with ACI 318, Chapter 12.

m. Epoxy Coated Reinforcement:

1) Rest epoxy coated steel members supported from formwork on coated wire bar supports, or on bar supports made of dielectric material or other suitable material.
2) Coat wire bar supports with dielectric material for minimum distance of 2 in. from point of contact with coated steel member.

3) Fasten epoxy-coated steel members with nylon-, epoxy-, or plastic-coated tie wire, or other suitable material acceptable to Engineer.
4) Mechanical connections, when required, shall be installed in accordance with splice device manufacturer's recommendations. Repair any damage to coating.
5) All parts of mechanical connections on epoxy-coated steel, including steel splice sleeves, bolts, and nuts shall be coated with same material used for repair of coating damage.
6) Do not cut epoxy-coated steel unless permitted by Engineer. When cut, coat ends with material used for repair of coating damage.
7) All welding of epoxy-coated steel shall conform to AWS D1.4.
8) Adequate ventilation shall be provided when welding epoxy-coated steel.
9) After welding, repair coating damage as specified in Part 3 heading "Quality Control Testing During Construction," paragraph "Epoxy Coated Material."

WI 1.5 TEMPORARY SIGNAGE

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment and supervision necessary to provide and install and remove following completion of project, temporary signage as required for traffic control and user information during construction and as required by Owner/Engineer.

B. Materials

1. Temporary signage shall meet following minimum requirements:

a. Minimum size: 24” x 48”
b. Backing material: 0.5 in. medium density overlay plywood.
c. Colors:

1) Background: medium orange or white.
2) Symbols/Lettering: black

d. Lettering: silk screened or die-cut.

1) Font Style: Helvetica or similar.
2) Size: 2 in. high minimum for pedestrian information; 4 in. high minimum for traffic information.

C. Execution

1. Mounting height: 5 ft. to bottom of sign. Provide mounting brackets as required.
2. Contractor shall submit shop drawings detailing sign size, layout, colors, and mounting schemes for approval prior to fabricating signs and mounting brackets.
3. Typical regulatory signs (that is, STOP, YIELD, etc.) and "Handicap" signs shall conform to all Federal, state, and local requirements for sizes, materials, and colors.

WI 1.11 SUPPLEMENTAL ANCHORS (FOR REFERENCE ONLY)

A. Scope of Work

1. This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to install supplementary anchors to attach loose reinforcement to concrete repair surfaces. This Work Item is included for reference only, and is incidental to other Work Items.

B. Materials

1. Provide supplementary anchors specified in Section “Surface Preparation for Patching,” Article “Reinforcement and Embedded Materials in Repair Areas,” and/or as specified on Details.

C. Execution

1. Contractor shall prepare concrete surfaces in accordance with other Work Items prior to supplementary anchor installation.
2. Contractor shall furnish and install supplementary anchors.
3. Engineer shall inspect supplementary anchors prior to patch placement.

WI 1.12 SUPPLEMENTAL ADHESIVE ANCHOR

A. Scope of Work

1. This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to drill adhesive anchor dowel holes, prepare hole, install adhesive anchoring material, and install supplemental reinforcement. Adhesive and reinforcement can be installed in any orientation. Adhesive anchors not shown in details or specified shall be paid for in this Work Item. This work will be in conjunction with “Supplemental Reinforcement.”

B. Materials

1. Adhesive anchoring shall be "Hilti HIT-HY 200 Adhesive Anchor System" by Hilti or approved equivalent. Adhesive consistency to be compatible for orientation placed.

C. Execution

1. Minimum Hilti embedment length: #3 bar is 4 ½ inches, #4 bar is 6 inches, and #5 bar is 7 ½ inches.
2. Dowel holes shall be drilled no larger than specified by anchor manufacturer.
3. Air blow, wire brush, air blow, etc., to clean anchor hole per manufacturer recommendations.
4. Follow manufacturer's instructions for adhesive and bar installation.
5. Maintain support and orientation of reinforcement until adhesive is cured.
6. Protect dowel from damage throughout repair process.
7. Engineer shall inspect dowel placement prior to concrete placement.

8. Reinforcement shall be paid for under “Supplemental Reinforcement.”

WI 1.13 SUPPLEMENTAL REINFORCEMENT

A. Scope of Work

1. This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to provide and install supplementary reinforcement not shown or referenced on Details, or specified in Work Items, as directed by Engineer. Reinforcement can be installed in any orientation.

B. Materials

1. Epoxy coated reinforcing steel shall be as specified in Section “Concrete Reinforcement.”

C. Execution

1. Engineer shall inspect existing reinforcement as specified in Section “Surface Preparation for Patching,” Article “Reinforcement and Embedded Materials in Repair Areas.”
2. Contractor to field verify all dimensions, bend and field cut to length as required.
3. Contractor shall furnish and install supplemental reinforcement at locations directed by Engineer.
4. As directed by Engineer, supplemental reinforcement (drilling adhesive anchor hole, hole preparation, adhesive anchor material installation) shall be paid under Work Item “Supplemental Adhesive Anchors.”

WI 1.14 SUPPLEMENTAL ANCHOR PIN (INCIDENTAL)

A. Scope of Work

1. This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to drill anchor pin hole, prepare hole, and install anchor pin. Anchor pins shall be installed where existing reinforcing bars are not fully exposed to mechanically support concrete repair material.

B. Materials

1. Approved anchor shall be ¼” diameter stainless steel “Tie-Wire Spike“ or “Mushroom Head Type 316 Stainless Spike” by Powers Fasteners, or approved equivalent.

C. Execution

1. Minimum 1¼” Spike embedment, length required to maintain 1” concrete cover.
2. Anchors shall be set at 8” o.c. maximum each way, minimum 2 anchors each way, with 2” edge distance.
3. Dowel holes shall be drilled no larger than specified by anchor manufacturer.
4. Air blow, wire brush, air blow, etc., hole clean and install per anchor manufacturer recommendations.
5. Protect Spike from damage throughout repair process.

6. Engineer shall inspect Spike placement prior to concrete placement.
7. Reinforcement, where used, shall be tied to Spike to maintain concrete cover.

WI 3.0 CONCRETE FLOOR REPAIR

A. Scope of Work

1. This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate existing spalls, locate and remove delaminated and unsound concrete, prepare cavities and install patching material to restore floor slab to original condition and appearance. Refer to Detail Series 3.0 for specific requirements.

B. Materials

1. Concrete material shall be Mix 5098SP by Cemstone Concrete Products or, pre-packaged “MS-S10 Concrete” Silica Modified Concrete material by King packaged Materials Company, Burlington, Ontario. Cure in accordance with ACI 301. Test in accordance with Section 010000.
2. Conventional steel reinforcement shall be as specified in Section Work Item “Concrete Reinforcement.”

C. Execution

1. Contractor shall locate and mark all Work areas as specified in Section "Surface Preparation for Patching," Article "Inspection."
2. Procedure for delaminated, spalled and unsound concrete removal shall be as specified in Section "Surface Preparation for Patching," Article "Preparation." Remove all unsound concrete within marked boundary prior to sawcutting and preparation of patch edges.
3. Engineer shall inspect all cavities for condition according to Section "Surface Preparation for Patching," Article "Inspection of Repair Preparation."
4. All steel exposed within cavities shall be cleaned to bare metal by sandblasting as specified in Section "Surface Preparation for Patching," Article "Cleaning of Reinforcement within Delamination and Spall Cavities," and damaged and defective reinforcement replaced as specified in Section "Surface Preparation for Patching," Article "Reinforcement and Embedded Materials in Repair Areas." Exposed steel shall be coated with an approved corrosion inhibitor as specified in Work Item "Concrete Reinforcement."
5. Contractor shall prepare cavities for patch placement as specified in Section "Surface Preparation for Patching," Article "Preparation of Cavity for Patch Placement."
6. Patch materials and associated reference specifications are listed in Work Item "Concrete Floor Repair," Article "Materials," above. Patch installation procedures shall be in accordance with referenced specifications for selected material.

WI 3.1 FLOOR REPAIR – PARTIAL DEPTH / SHALLOW

A. Refer to Work Item "Concrete Floor Repair" for scope of Work, materials and procedure associated with this Work Item. Refer to Detail 3.1 for specific requirements.

WI 3.2 FLOOR REPAIR – PARTIAL DEPTH / DEEP

A. Refer to Work Item "Concrete Floor Repair" for scope of Work, materials and procedure associated with this Work Item. Refer to Detail 3.2 for specific requirements.

WI 3.4 FLOOR REPAIR – CURBS / WALKS

A. Scope of Work

1. This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate existing spalls, locate and remove delaminated and unsound concrete from curbs, prepare cavities and install patching material to restore curbs to original condition and appearance. Refer to Detail 3.4 for specific requirements.

B. Materials

1. Concrete repair materials shall be as specified in Section "Latex Modified Concrete and Mortar."
2. Conventional steel reinforcement shall be as specified in Section “Cast-in-Place Concrete” and/or Work Item “Concrete Reinforcement.”

C. Execution

1. Contractor shall locate and mark all Work areas as specified in Section "Surface Preparation for Patching," Article "Inspection."
2. Procedure for delaminated, spalled and unsound concrete removal shall be as specified in Section "Surface Preparation for Patching," Article "Preparation." Remove all unsound concrete within marked boundaries prior to sawcutting and preparation of patch edges.
3. Engineer/Architect shall inspect all cavities for condition according to Section "Surface Preparation for Patching," Article "Inspection of Repair Preparation."
4. All steel exposed within cavities shall be cleaned to bare metal by sandblasting as specified in Section "Surface Preparation for Patching," Article "Cleaning of Reinforcement within Delamination and Spall Cavities," and damaged reinforcement replaced as specified in Section "Surface Preparation for Patching," Article "Reinforcement and Embedded Materials in Repair Areas." Exposed steel shall be coated with an approved corrosion inhibitor coating as specified in Work Item "Concrete Reinforcement."
5. Contractor shall prepare cavities for patch placement as specified in Section "Surface Preparation for Patching," Article "Preparation of Cavity for Patch Placement."

6. Patch materials and associated reference specifications are listed in Work Item "Floor Repair - Curbs," Article "Materials," above. Patch installation procedures shall be in accordance with referenced specifications for selected material.

WI 6.0 CONCRETE COLUMN REPAIR

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals including shoring necessary to locate existing spalls, locate and remove delaminated and unsound concrete, prepare cavities and install patching materials to restore concrete columns to original condition and appearance. Refer to Detail Series 6.0 for specific requirements.

B. Materials

1. Concrete repair materials shall be as specified in Section "Cast-in-Place Concrete and/or Section “Latex Modified Concrete and Mortar."
2. Trowel applied patching material shall be as specified in Section "Trowel Applied Mortar." This material may be used for shallow removal and repair Work Item only.

C. Execution

1. Contractor shall locate and mark all Work areas as specified in Section "Surface Preparation for Patching," Article "Inspection."
2. Procedure for delaminated and unsound concrete removal shall be as specified in Section "Surface Preparation for Patching," Article "Preparation."
3. Engineer/Architect shall inspect all cavities for condition according to Section "Surface Preparation for Patching," Article "Inspection of Repair Preparation."
4. All steel exposed within cavities shall be cleaned to bare metal by sandblasting according to Section "Surface Preparation for Patching," Article "Cleaning of Reinforcement within Delamination and Spall Cavities," and damaged and defective reinforcement replaced as specified in Section "Surface Preparation for Patching," Article "Reinforcement and Embedded Materials in Repair Areas." Exposed steel shall be coated with an approved corrosion inhibitor as specified in Section "Concrete Reinforcement."
5. Contractor shall prepare cavities for patch placement as specified in Section "Surface Preparation for Patching," Article "Preparation of Cavity for Patch Placement."
6. Patch materials and associated reference specifications are listed in Work Item "Concrete Column Repair," Article "Materials," above. Patch installation procedures shall be in accordance with referenced specifications for selected material.
7. Contractor shall take care to protect adjacent areas from overspray if "Shotcrete" is used. Area adjacent to repair shall be cleaned to Owner's satisfaction prior to leaving site.

WI 6.1 COLUMN REPAIR – PARTIAL DEPTH/SHALLOW

A. Refer to Work Item "Concrete Column Repair" for scope of Work, materials and procedure associated with this Work Item. Refer to Detail 6.1 for specific requirements.

WI 7.0 CONCRETE WALL REPAIR

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate existing spalls, locate and remove delaminated and unsound concrete, prepare cavities and place patching materials to restore concrete walls to original condition and appearance. Refer to Detail Series 7.0 for specific requirements.

B. Materials

1. Trowel applied patching material shall be as specified in Section "Trowel Applied Mortar." This material may be used for shallow removal and repair Work Item only.

C. Execution

1. Contractor shall locate and mark all Work areas as specified in Section "Surface Preparation for Patching," Article "Inspection."
2. Procedure for delaminated, spalled and unsound concrete removal shall be as specified in Section "Surface Preparation for Patching," Article "Preparation."
3. Engineer/Architect shall inspect all cavities for condition according to Section "Surface Preparation for Patching," Article "Inspection of Repair Preparation."
4. All steel exposed within cavities shall be cleaned to bare metal by sandblasting according to Section "Surface Preparation for Patching," Article "Cleaning of Reinforcement within Delamination and Spall Cavities," and damaged and defective reinforcement replaced as specified in Section "Surface Preparation for Patching," Article "Reinforcement and Embedded Materials in Repair Areas." Exposed steel shall be coated with an approved corrosion inhibitor coating as specified in Section "Cast-in-Place Concrete."
5. Contractor shall prepare cavities for patch placement as specified in Section "Surface Preparation for Patching," Article "Preparation of Cavity for Patch Placement."
6. Patch materials and associated reference specifications are listed in Work Item "Concrete Wall Repair," Article "Materials," above. Patch installation procedures shall be in accordance with referenced specifications for selected material.
7. Contractor shall take care to protect adjacent areas from overspray if "Shotcrete" is used. Area adjacent to repair shall be cleaned to Owner's satisfaction prior to leaving site.

WI 7.1 WALL REPAIR - PARTIAL DEPTH / SHALLOW

A. Refer to Work Item "Concrete Wall Repair" for scope of Work, materials and procedure associated with this Work Item. Refer to Detail 7.1 for specific requirements.

WI 10.0 EXPANSION JOINT REPAIR AND REPLACEMENT

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to remove existing expansion joints, prepare adjacent

concrete and furnish and install new expansion joint system. Refer to Detail Series 10.0 for specific requirements.

B. Materials

1. Expansion joint system materials shall be as specified in Section "Expansion Joint Assemblies," installed in strict accordance with manufacturer's recommendations.
2. Patching materials shall be prepackaged “LM-S6 Concrete” Latex Modified Concrete by King Packaged Materials Company, Burlington, Ontario, "Trowel Applied Mortar,” other concrete or epoxy based repair materials specified by expansion joint manufacturer to insure expansion joint system warranty.

C. Execution

1. Contractor shall remove existing expansion materials in manner that minimizes damage to adjacent concrete. Alterations to existing expansion joint blockout required for installation of new expansion joint system shall be performed in accordance with Work Item "Floor Repair - Provide Expansion Joint Blockout" and Section "Surface Preparation for Patching."
2. Joint materials and associated reference specifications are listed in Work Item "Expansion Joint Repair and Replacement," Article "Materials," above. Joint installation procedures shall be in accordance with referenced specifications and manufacturer's recommendations.
3. In-place testing: Prior to opening to traffic, test joint seal for leaks with 2 in. water depth maintained continuously for 12 hrs. Repair leaks revealed by examination of seal underside. Repeat test and repairs until all leaks stopped for full 12 hrs.

WI 10.5 EXPANSION JOINT REPAIR – ADHERED

A. Refer to Work Item "Expansion Joint Assemblies" for scope of Work, materials and procedure associated with this Work Item. Refer to Detail Series 10.5 for specific requirements.

WI 11.0 CRACK AND JOINT REPAIR

WI 11.2 REPAIR CRACK / JOINT SEALANT

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate and mark failed joint sealant, remove existing sealant, prepare edges and reseal joints and cracks. Refer to Detail 11.2 for specific requirements.

B. Materials

1. Approved materials for use in this Work are specified in Section "Joint Sealants."

C. Execution

1. Contractor shall locate failed crack/joint sealant by visual inspection.

2. Contractor shall remove existing sealant from joints and/or cracks.
3. When existing joint dimensions do not conform to Detail 11.2, joints shall be routed or sawcut to an adequate width and depth as required by Work Item Detail. Routing shall be performed by mechanized device that has positive mechanical control over depth and alignment of cut.
4. Cavities shall be thoroughly cleaned by either sandblasting or grinding to remove all remaining sealant and unsound concrete which may interfere with adhesion. Groove shall also be air blasted to remove remaining debris.
5. Install sealants in accordance with sealant manufacturer's instructions and the specification Section "Joint Sealants."
6. Traffic topping manufacturer shall specify joint sealant type compatible with traffic topping. Crack and joint sealant work shall be incidental to traffic topping system.

WI 11.3 REPAIR VERTICAL JOINT SEALANT

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate and install vertical joint sealant. Refer to Detail Series 11.3 for specific requirements.

2. Work includes removal and replacement of all exterior sealant at precast concrete panel joints including but not limited to panel to panel, panel to column, and panel to wall conditions. Refer to detail 11.3.1 for additional information.

B. Materials

1. Materials used shall be as specified in Section "Concrete Joint Sealants."

C. Execution

1. Contractor shall locate and mark Work areas as located on Drawings.
2. Contractor shall remove existing sealant from joints.
3. Cavities shall be thoroughly cleaned by either sandblasting or grinding, or other means specified by sealant manufacturer to remove all remaining sealant, laitance, and unsound concrete, which may interfere with adhesion. Joint shall also be air blasted to remove remaining debris.
4. Joint shall be cleaned by sand and air blasting.
5. Properly prepared intersection shall be coated evenly and completely with joint primer material on each face in accordance with sealant manufacturer's recommendations.
6. Sealant shall be tooled concave. No wet tooling will be allowed. Joint preparation, backer rod and bond breaker shall be in accordance with sealant manufacturer's recommendations.
7. Sealant materials and associated reference specifications are listed in WI "Repair Vertical Joint Sealant"," Article "Materials," above. Sealant installation procedures shall be in accordance with referenced specifications for selected material.

WI 11.7 COVE SEALANT

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to prepare concrete surfaces and install cove sealant between floor and vertical surfaces as shown on Drawings. Refer to Detail 11.7 for specific requirements.

B. Materials

1. Joint sealant materials shall be as specified in Section "Concrete Joint Sealants."
2. Joint sealant material compatible with traffic topping materials shall be specified in Section "Traffic Coatings" by traffic topping manufacturer and is incidental to traffic topping system.

C. Execution

1. Wall-floor intersection to be sealed shall be thoroughly cleaned by sandblasting to remove all contaminants and foreign material.
2. Entire Work area shall then be cleaned with compressed air to assure that all loose particles have been removed and that intersection is dry.
3. Properly prepared intersection shall be coated evenly and completely with joint primer material on each of intersecting faces in accordance with sealant manufacturer's recommendations.
4. After primer has cured, apply cove sealant to intersection such that sealant extends no less than 0.75 in. onto each of intersecting faces.
5. Work cove sealant into joint so that all air is removed and tool to concave shape such that minimum throat dimension of no less than 0.5 in. is maintained.
6. Remove excess sealant and allow to cure.
7. Apply coating on horizontal and vertical surfaces in even layers in strict accordance with manufacturer's recommendations. Sealant material and associated reference specifications are listed in Work Item "Cove Sealant," Article "Materials," above. Sealant installation procedures shall be in accordance with referenced specifications for selected material.

WI 16.0 TRAFFIC TOPPING – VEHICULAR / RECOAT

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals, including installation of joint sealant materials, necessary to prepare existing floor surface and install traffic topping as shown on Detail Series 16.0 and Drawings, and restripe traffic markings at coated areas. Coating all vertical surfaces within Work area shall be incidental to installation of traffic topping.

B. Materials

1. Approved materials for use in this Work are as specified in Section "Traffic Coatings."

C. Execution

1. Coordinate with concrete patching contractor that traffic topped areas shall be finished flush with adjacent concrete surfaces.
2. Contractor shall grind high slab ridges per traffic topping manufacturer.
3. Refer to Detail 16.1 for traffic topping filler material. Depressed areas to be built up with additional traffic topping system to eliminate localized water ponding. Filler material is incidental to this work.
4. Floor surface preparation shall be performed by coating system applicator or under its direct supervision. Shotblast and solvent-wash of traffic topped surface preparation is required.
5. Traffic topping shall be installed by licensed applicators in strict accordance with manufacturer's recommendations and referenced specification section listed in Work Item "Traffic Coating," Article "Materials," above. Crack, joint and cove preparation, including installation of joint sealant material is incidental to traffic topping work.
6. Coating system shall be fully cured and restriped prior to Work areas being returned to service.

WI 16.4 TRAFFIC TOPPING – RECOAT (PARTIAL SYSTEM)

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals, including preparation and installation of crack, joint and cove sealant materials, necessary to prepare and recoat the existing traffic topping as shown on Drawings.

B. Materials

1. Approved materials for use in this Work are as specified in Section " Traffic Coatings." Traffic topping recoating material shall be compatible with existing system. Existing membrane is as follows:
2. Prior to start of Work, obtain written approval from traffic topping manufacturer that the existing surface is acceptable for application of proposed traffic topping and that the membrane is compatible with existing system.

C. Execution

1. Preparation of existing traffic topping membrane shall be in strict accordance with manufacturer's recommendations and Section " Traffic Coatings." Floor surface preparation shall be performed by coating system applicator or under its direct supervision.
2. Traffic topping shall be installed by licensed applicators in strict accordance with manufacturer's recommendations and Section “Waterproofing System.” Preparation and installation of crack, joint, and cove sealant material, where required, is incidental to this Work Item.
3. Completely solvent-wash all existing traffic coating that is bonded to concrete slab.
4. All loose existing coating shall be removed and exposed concrete surfaces prepared in accordance with manufacturer's requirements. See Section " Traffic Coatings."

5. Prior to recoating the area, any patches and/or bare concrete areas shall be coated with a base coat and an appropriate number of intermediate coats to bring the new membrane up to the level of the existing membrane. After this has been completed, the entire area will be recoated.
6. Existing traffic topping membrane shall be recoated with a minimum of one intermediate coat with aggregate and one top coat.
7. Coating system shall be thoroughly cured and traffic marking completed prior to returning work areas to service.

WI 16.5 TRAFFIC TOPPING – RECOAT (COMPLETE SYSTEM)

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals, including preparation and installation of crack, joint and cove sealant materials, necessary to prepare and recoat the existing traffic topping as shown on Drawings.

B. Materials

1. Approved materials for use in this Work are as specified in Section " Traffic Coatings." Traffic topping recoating material shall be compatible with existing system.
2. Prior to start of Work, obtain written approval from traffic topping manufacturer that the existing surface is acceptable for application of proposed traffic topping and that the membrane is compatible with existing system.

C. Execution

1. Preparation of existing traffic topping membrane shall be in strict accordance with manufacturer's recommendations and Section " Traffic Coatings." Floor surface preparation shall be performed by coating system applicator or under its direct supervision.
2. Traffic topping shall be installed by licensed applicators in strict accordance with manufacturer's recommendations and Section “Traffic Coatings.” Preparation and installation of crack, joint, and cove sealant material, where required, is incidental to this Work Item.
3. **All loose existing coating in repair area shall be fully removed** and exposed concrete surfaces prepared in accordance with manufacturer's requirements. See Section " Traffic Coatings."
4. Prior to recoating the area, any patches and/or bare concrete areas shall be coated with a base coat and an appropriate number of intermediate coats to bring the new membrane up to the level of the existing membrane. After this has been completed, the entire area will be recoated.
5. Existing traffic topping membrane shall be recoated with a minimum of one intermediate coat with aggregate and one top coat.
6. Coating system shall be thoroughly cured and traffic marking completed prior to returning work areas to service.

WI 35.0 BRICK / MASONRY REPAIRS

WI 35.1 TUCKPOINTING

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to tuckpoint defective, cracked, broken or eroded joints in existing brick work, and side vertical joints and top masonry joint where new brick abuts existing. Refer to detail 35.1 for specific requirements.

B. Materials

1. Portland Cement: ASTM C 150, Type I or II.
2. Quickline: ASTM C5; pulverized lime.
3. Hydrated Lime: ASTM C 207, Type N.
4. Aggregate for Mortar: ASTM C 144; except for joints less than 0.25 in., use aggregate graded with 100% passing the No. 16 sieve.
5. Water: Portable
6. Mortar shall match existing color.

C. Execution

1. Contractor shall locate and mark all Work areas. Engineer/Architect shall verify locations prior to start of Work.
2. All defective joints which are cracked, broken, or eroded to depth of 0.5 in. or more, and all vertical side joints and top masonry joints where new brick abuts existing shall be tuckpointed.
3. Joints to be tuckpointed shall be cut back to depth of 0.75 in., or to full depth of deterioration. Use mechanically operated blades only to perform cutting. Joint at back of cut shall have square shoulder. Remove all mortar from upper and lower surfaces and sides of mortar joint being prepared.
4. Contractor shall flush all mortar joints thoroughly with clean water under pressure prior to tuckpointing to remove all dust, dirt, and laitance. Brick shall be damp and free of excess water before tuckpointing commences. Take all necessary precautions to prevent water from entering cavity space during cleaning operations.
5. Tuckpointing shall be performed using Type N mortar in accordance with Section "Clay Masonry Restoration” unless otherwise directed by Engineer. Match existing mortar color. Mortar shall be dry and mixed thoroughly prior to adding water. Add one-half required mixing water and allow to stand 1 hour, then add balance of mixing water.
6. Press mortar into prepared joint using pointing tool 0.125 in. smaller than width of joint until joint is packed full. Finish point joint with pointing tool at least 0.125 in. wider than prepared joint.
7. Prior to initial set of mortar, tool joints to match existing.
8. Allow 3 to 7 days for mortar to harden prior to cleaning of brick wall.
9. Dispose of all accumulated material and leave premises in clean condition.
10. Masonry surfaces that become dirty or smeared during joint cutting and repointing of joint surfaces shall be cleaned with bristle brushes and plain water.
11. Unnecessary damage to surrounding brick shall be repaired by Contractor at no cost to Owner.

WI 35.7 THROUGH WALL FLASHING

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to install through wall flashing. Refer to Detail 35.7 for specific requirements.

B. Materials

1. Flashing: 24 gage prefinished sheet steel or approved equal.
2. Self-adhered Waterproofing: Bituthene 3000, WR Grace & Co. or approved equal.
3. Closed-cell Insulation: Walltite, BASF or approved equal.

C. Execution

Contractor shall locate and mark all Work areas. Engineer/Architect shall verify

WI 41.0 STAIRS

WI 41.5 REPLACE STAIR NOSING

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate debonded nosing, prepare substrates, furnish and install new nosing material in existing stair nosing sub channel.

B. Materials

1. Materials for nosing replacement shall match existing system. Provide prefabricated interts to be installed in existing nosing sub channel. Acceptable manufacturers shall be as follows:

    a. Model TP-311, by American Safety Tread, Helna, AL.

    b. Or approved equal.

C. Execution

1. Prepare substrates and install nosings in strict conformance with manufacturer's requirements.

WI 44.0 MISCELLANEOUS

WI 44.5 ATTACH WOOD BUMPER

A. Scope of Work

1. Replace mounting hardware of existing wood vehicle bumper to match existing hardware.

WI 45.0 PAINTING

A. Scope of Work

1. Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to contain, with full height barriers, sandblasting debris and paint during operations and prepare, prime and paint all structural steel and miscellaneous metal items as located on Drawings.

B. Materials

1. Universal Primer: Sherwin Williams Kem Kromik Universal Metal Primer, or approved equivalent.
2. Galvanized-Material Coating: Sherwin Williams Galvite HS, or approved equivalent.
3. Sherwin Williams Steel Master™ 9500 Coating, B56-300 Series or approved equivalent.
4. Match existing and adjacent surfaces color and texture.

C. Execution

1. Contractor shall locate and verify with Engineer all Work areas.
2. Contractor shall verify color selection with Owner prior to start of Work. Contractor shall provide color selection chart and shop drawing drawdowns for Engineer's approval.
3. Contractor shall solvent clean any surface area with oil or grease build-up prior to receiving sandblast preparation in accordance with SSPC-SP1.
4. Remove rust, loose mill scale, and loose existing paint or primer, if any. Clean using methods recommended in writing by paint manufacturer
5. Contractor shall air blast and remove all debris from Work area prior to application of primer or paint.
6. Contractor shall apply primer to all prepared metal surfaces on same day (within 8 hrs) as surface preparation operations. Apply primer in strict accordance with manufacturer's recommendations. At galvalnized metals Contractor shall provide specificed galvanized-material coating in lieu of primer.
7. Contractor shall apply paint in accordance with referenced specification section listed in Work Item "Paint Structural Steel," Article "Materials," above.

WI 45.4 PAINT DOORS AND FRAMES

A. Refer to Work Item "Painting" for scope of Work, materials and procedure associated with this Work Item.

WI 45.7 PAINT MISCELLANEOUS METALS

A. Refer to Work Item "Painting" for scope of Work, materials and procedure associated with this Work Item.
B. Scope includes preparation and painting of snow dump dates and hardware, bollards, railings and other items as indicated.

WI 45.8 PAINT SKYWAY

A. Refer to Work Item "Painting" for scope of Work, materials and procedure associated with this Work Item.
B. Scope includes preparation and painting of structural steel, steel soffits and flashing/coping as indicated.

END OF SECTION 020010

SECTION 025130 - GENERAL CONCRETE SURFACE PREPARATION

PART 1 - GENERAL

1.1 DEFINITIONS

A. **DELAMINATIONS**: Fracture planes, "internal cracks," within concrete. Typically these fractures are parallel to the member face and vary in depth.

B. **NEAR-VERTICAL CHIPPED EDGES:** Provide an edge dressed to within 20^{o} of perpendicular of finished surface.

C. **SPALLS:** Potholes, cavities or voids in floor slabs, beams, columns, and walls. Usually result of delamination migrating to face of concrete member. When fracture finally reaches surface, concrete encompassed by delamination breaks away, resulting in spall.

D. **UNSOUND CONCRETE:** Concrete exhibiting one or more of:

1. Incipient fractures present beneath existing delaminated or spalled surfaces.
2. Honeycombing.
3. Friable or punky areas.
4. Deterioration from freeze-thaw action.

E. **SCALING:** Deterioration which attacks mortar fraction (paste) of concrete mix. First appears as minor flaking and disintegration of concrete surface. Scaling eventually progresses deeper into concrete, exposing aggregate which breaks away. Concrete scaling is caused by freeze-thaw action. If concrete is frozen in saturated state, excess water freezing in concrete causes high internal stresses.

F. **SHOTBLASTING:** Scarification of concrete surfaces using an abraded metal shot-rebound. See Corps of Engineer’s Manual EM 1110-2-2002 and the National Cooperative Highway Research Program’s Report #99 for a more detailed definition.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 025130

SECTION 025140 - SURFACE PREPARATION FOR PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Owner provided Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes the provision of all labor, materials, equipment, supervision and incidentals necessary to locate and remove all delaminated and unsound concrete and preparation of cavities created by removal to receive patching material and preparation of existing surface spalls and potholes to receive patching material.

1.3 REFERENCES

A. "Specifications for Structural Concrete for Buildings" (ACI 301) by American Concrete Institute, herein referred to as ACI 301, is included in total as specification for this structure except as otherwise specified herein.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 INSPECTION

A. Floor Slabs:

1. Floor slab delaminations: locate by sounding surface with hammer, rod, or chain drag.
2. When delaminated area is struck, distinct hollow sound is heard.
3. Contractor: sound all designated floors for delaminations.

B. Vertical and Overhead Surfaces:

1. Vertical and overhead surface delaminations: locate by sounding appropriate member with hammer or rod.
2. Cracks, usually horizontal in orientation along beam faces and flange connectors, and vertical in orientation near column corners are indicators of delaminated concrete.
3. Contractor: sound only vertical and overhead surfaces that show evidence of cracking and/or salt and water staining.

C. Delaminated areas, once located by Contractor, shall be further sounded to define limits. Mark limits with chalk or paint.

D. Contractor: locate spalls by visual inspection and mark boundaries with chalk or paint after sounding surface.

E. Engineer will define and mark additional unsound or unsound concrete areas for removal, if required.

F. Areas to be removed shall be as straight and rectangular as practical to encompass repair and provide neat patch.

G. Contractor: Locate and determine depth of all embedded REINFORCEMENT, and ELECTRICAL CONDUIT in repair area and mark these locations for reference during concrete removal. Do **NOT** nick or cut any embeds unless approved by Engineer.

3.2 PREPARATION

A. Temporary shoring may be required at concrete floor repair areas exceeding 5 sq ft and at any beam, joist, or column repair. Contractor: Review all marked removal and preparation areas and request clarification by Engineer of shoring requirements in questionable areas. Shores shall be in place prior to concrete removal and cavity preparation in any area requiring shores.

B. Delaminated, spalled and unsound concrete floor areas: mark boundaries. All concrete shall be removed from within marked boundary to minimum depth of 0.75 in. using 15 to 30 lb chipping hammers equipped with chisel point bits. When directed by Engineer, chipping hammers less than 15 lb shall be used to minimize damage to sound concrete. If delaminations exist beyond minimum removal depth, chipping shall continue until all unsound and delaminated concrete has been removed from cavity.

C. Where embedded reinforcement is exposed by concrete removal, exercise extra caution to avoid damaging it during removal of unsound concrete. If bond between exposed embedded reinforcement and adjacent concrete is impaired by Contractor's removal operations, Contractor shall perform additional removal around and beyond perimeter of reinforcement for minimum of 0.75 in. along entire length affected at no cost to Owner.

D. If rust is present on embedded reinforcement where it enters sound concrete, additional removal of concrete along and beneath reinforcement required. Additional removal shall continue until non-rusted reinforcement is exposed, or may be terminated as Engineer directs.

E. Sawcut to depth of 0.75 in. into floor slab, unless otherwise noted. For vertical and overhead surfaces marked boundary may be sawcut, ground or chipped to depth of 0.5 in. to 0.625 in. into existing concrete, measured from original surface. All edges shall be straight and patch areas square or rectangular-shaped. Diamond blade saw or grinder with abrasive disk suitable for cutting concrete is acceptable for performing work. Edge cut at delamination boundary shall be dressed perpendicular to member face. It shall also be of uniform depth, for entire length of cut. Exercise extra caution during sawcutting to avoid damaging existing reinforcement and any other embedded items near surface of concrete. Any damage to existing reinforcement, or embeds during removals shall be repaired by Contractor with Engineer-approved methods at no additional cost to Owner.

3.3 INSPECTION OF REPAIR PREPARATION

A. After removals are complete, but prior to final cleaning, cavity and exposed reinforcement shall be inspected by Contractor and verified by Engineer for compliance with requirements of this Section. Where Engineer finds unsatisfactory cavity preparation, Engineer shall direct Contractor to perform additional removals. Engineer shall verify areas after additional removals.

B. Contractor shall inspect embedded reinforcement and conduits exposed within cavity for defects due to corrosion or damage resulting from removal operations. Contractor shall notify Engineer of all defective and damaged reinforcement or conduits. Replacement of damaged or defective reinforcement or conduits shall be performed according to this Section and as directed by Engineer.

3.4 REINFORCEMENT AND EMBEDDED MATERIALS IN REPAIR AREAS

A. All embedded reinforcement exposed during surface preparation that has lost more than 15% (10% if 2 or more consecutive parallel bars and/or tendons are affected) of original cross-section due to corrosion shall be considered DEFECTIVE. All non-defective exposed reinforcement that has lost section to extent specified above as direct result of Contractor's removal operations shall be considered DAMAGED.

B. **Embedded materials** including, but not limited to, electrical conduit, headed studs, corrosion protection systems and snow/ice melting equipment **shall be protected by Contractor** during removal operations. **Damage due to removal operations shall be repaired by Contractor in accordance with national code requirements at no cost to Owner.** Embedded materials which are defective due to pre-existing conditions may be repaired or replaced by Contractor or abandoned at Owner's option and cost.

C. Supplement defective or damaged embedded reinforcement by addition of reinforcement of equal diameter with Class "B" minimum splice per ACI 318 beyond damaged portion of reinforcement. Secure new reinforcement to existing reinforcement with wire ties and/or approved anchors. Supplemental reinforcement shall be ASTM A615 Grade 60 steel.

D. Loose reinforcement exposed during surface preparation shall be securely anchored prior to patch placement. Loose reinforcement shall be adequately secured by wire ties to bonded reinforcement or shall have drilled-in anchors installed to original deck. Drilled-in anchors shall be Hilti HKT 14 "Kwik Tie" anchors, ITW Ramset/Red Head WT-1400 anchors, or approved equivalent. Engineer will determine adequacy of wire ties and approve other anchoring devices prior to their use. Securing loose reinforcement is incidental to surface preparation and no extras will be allowed for this Work.

E. Concrete shall be removed to provide minimum of 3/4 in. clearance on all sides of defective or damaged exposed embedded reinforcement that is left in place. Minimum of 1.5-in. concrete cover shall be provided over all new and existing reinforcement. Concrete cover over reinforcement may be reduced to 1 in. with Engineer's approval if coated with an approved epoxy resin.

3.5 CLEANING OF REINFORCEMENT WITH DELAMINATION AND SPALL CAVITIES

A. All exposed steel shall be cleaned of rust to bare metal by sandblasting. Cleaning shall be completed immediately before patch placement to insure that base metal is not exposed to elements and further rusting for extended periods of time. Engineer may require entire bar diameter be cleaned.

B. After all sandblasting operations and cleanup are completed, paint all exposed steel with an approved epoxy. Protect prepared surfaces from damage prior to and during patch placement.

3.6 PREPARATION OF CAVITY FOR PATCH PLACEMENT

A. Cavities will be examined prior to commencement of patching operations. Sounding surface shall be part of examination. Any delamination noted during sounding shall be removed as specified in this Section.

B. Cavities shall be sandblasted. Airblasting is required as final step to remove sand. All debris shall be removed from site prior to commencement of patching.

END OF SECTION 025140

SECTION 033760 - TROWEL APPLIED MORTAR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes the provision of all labor, materials, supervision and incidentals necessary to prepare deteriorated or damaged concrete surfaces and install patches to overhead and vertical surfaces to restore original surface condition and integrity.

B. Related Sections: Following Sections contain requirements that relate to this Section:

1. Division 02 Section "Work Items."
2. Division 02 Section "General Concrete Surface Preparation."
3. Division 02 Section "Surface Preparation for Patching."

1.3 QUALITY ASSURANCE

A. Work shall conform to requirements of ACI 301 as applicable except where more stringent requirements are shown on Drawings or specified in this Section.

B. Testing Agency:

1. Independent testing laboratory employed by Owner and acceptable to Engineer.
2. Accredited by AASHTO under ASTM C1077. Testing laboratory shall submit documented proof of ability to perform required tests.

C. Testing Agency is responsible for conducting, monitoring and reporting results of all tests required under this Section. Testing Agency has authority to reject mortar not meeting Specifications.

D. Sampling and testing of mortar shall be performed by ACI certified Concrete Field Technicians Grade I. Certification shall be no more than three years old.

E. Testing Agency shall submit following information for Field Testing of Concrete unless modified in writing by Engineer:

1. Project name and location.
2. Contractor's name.
3. Testing Agency's name, address and phone number.
4. Mortar manufacturer.
5. Date of report.
6. Testing Agency technician's name (sampling and testing).
7. Placement location within structure.
8. Weather data:

    a. Air temperatures.
    b. Weather.
    c. Wind speed.

9. Date, time, and place of test.
10. Compressive test data:
    a. Cube number.
    b. Age of mortar when tested.
    c. Date and time of cube test.
    d. Compressive strength.

1.4 REFERENCES

A. "Standard Specification for Structural Concrete" (ACI 301) by American Concrete Institute, herein referred to as ACI 301, is included in total as specification for this structure except as otherwise specified herein.

B. Comply with provisions of following codes, specifications and standards except where more stringent requirements are shown on Drawings or specified herein:
    1. "Building Code Requirements for Structural Concrete" (ACI 318), American Concrete Institute, herein referred to as ACI 318.
    2. "Hot Weather Concreting" reported by ACI Committee 305.
    3. "Cold Weather Concreting" reported by ACI Committee 306.
    4. “Standard Specification for Curing Concrete” (ACI 308)

C. Contractor shall have following ACI publications at Project construction site at all times:
    1. "Standard Specifications for Structural Concrete (ACI 301) with Selected ACI and ASTM References," ACI Field Reference Manual, SP15.
    2. "Hot Weather Concreting" reported by ACI Committee 305.
    3. "Cold Weather Concreting" reported by ACI Committee 306.
    4. “Standard Specification for Curing Concrete” (ACI 308)

D. American Society for Testing and Materials (ASTM):
    1. ASTM C109, "Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens)."
    2. ASTM C31, “Test Method for Compressive Strength of Cylindrical Concrete Specimens.”

1.5 SUBMITTALS

A. Make submittals in accordance with requirements of Division 01 and as specified in this Section.

B. Contractor: At pre-construction meeting, submit procedures for demolition, surface preparation, material batching, placement, finishing, and curing of application. Provide procedure to protect fresh patches from severe weather conditions.

C. Testing Agency: Promptly report all mortar test results to Engineer and Contractor. Include following information:
    1. See Article "Quality Assurance," paragraph "Testing Agency shall submit...."
    2. Strength determined in accordance with ASTM C109.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Trowel Applied Repair Mortar: Shall be prepackaged cementitious repair mortar with integral corrosion inhibitor capable of vertical/overhead application by trowel achieving a minimum 3,000 psi compressive strength at 7 days and 5,000 psi compressive strength at 28 days per ASTM C 109 as certified by manufacturer. Manufacturer to submit volume and size of SSD aggregate used for mix extension.

1. Acceptable materials for this Work are as follows:

a. Polymer and silica fume modified:

1) "Sikacrete 211 SCC Plus" by Sika Corporation, Lyndhurst, NJ.
2) "Planitop ll SCC", by MAPEI Corporation, Deerfield Beach, FL.

2.2 MATERIAL ACCESSORIES

A. Extended Open Time Epoxy Bonding Agent: Three component, water based, epoxy modified Portland cement bonding agent and corrosion inhibitor coating providing the recommended Manufacturer's open time in which to apply repair mortar. Product shall be capable of achieving bond strength of 2,700 psi per ASTM C 882.

1. Acceptable materials for this Work are:

a. "Duralprep A.C." by The Euclid Chemical Company, Cleveland, OH.
b. "Sika Armatec 110 EpoCem", by Sika Corporation, Lyndhurst, NJ.
c. "PLANIBOND 3C", by MAPEI Corporation, Deerfield Beach, FL.

B. Epoxy Adhesive: 2 or 3 component, 100 percent solids, 100 percent reactive compound suitable for use on dry or damp surfaces. Product shall be capable of achieving bond strength of 1,800 psi per ASTM C 882.

1. Acceptable materials for this Work are:

a. "Euco #452 Epoxy Series," or "Duralcrete Epoxy Series", by The Euclid Chemical Company, Cleveland, OH.
b. Sikadur 32 Hi-Mod LPL", by Sika Corporation, Lyndhurst, NJ.
c. "Planibond EBA", by MAPEI Corporation, Deefield Beach, FL.

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Preparation: Cavity surfaces shall be clean and dry prior to commencement of patch installation. Preparation of cavity to receive new mortar shall be in accordance with Section "Surface Preparation for Patching" and manufacturer's instructions.

3.2 INSTALLATION

A. Repair Mortar Bonding Grout:

1. Mix and apply bonding grout in strict accordance with manufacturer's recommendations.

2. If bonding grout dries, cavity shall not be patched until it has been recleaned and prepared as specified in Section "Surface Preparation for Patching." Grout shall not be applied to more cavities than can be patched within 0.25 hr by available manpower.

B. Epoxy Bonding Agent**:**

1. In strict accordance with manufacturer's recommendations, mix and apply epoxy bonding agent to prior to placing forms in areas to receive form and pour repair mortar.

C. Mortar Placement: Patching materials shall be placed immediately following grout application in strict accordance with manufacturer's instructions. Properly proportioned and mixed patch material shall be placed using trowels to consolidate patch so that no voids exist within new material and continuous contact with base concrete is achieved. Supplemental wire mesh shall be required for delamination and spall repairs greater than two inches in depth. Fresh bonding grout is required between successive lifts of patching material.

3.3 CURING

A. Protect freshly placed concrete repair mortar from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during placement. Keep patch material continually moist prior to final curing by evaporation retarder, misting, sprinkling, or using absorptive mat or fabric covering kept continually moist.

1. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.1 lb/sq. ft. x h before and during finishing operations. Apply compatible material according to manufacturer's written instructions one or more times after placement, but prior to float finishing. Repeated applications are prohibited after float finishing has begun.

2. Acceptable evaporation retarder materials for this Work are:

a. "Cimfilm", by Axim Concrete Technologies.
b. "MasterKure ER 50", by BASF Construction Chemicals, Shakopee, MN.
c. "Aquafilm", by Conspec Marketing & Manufacturing Co., Inc.
d. "Sure-Film (J-74)', by Dayton Superior Corporation.
e. "Eucobar", or "Tamms Surface Retarder", by The Euclid Chemical Company, Cleveland, OH.
f. "E-Con", by L&M Construction Chemicals, Inc.
g. "EVRT", by Russ Tech Admixtures, Inc.
h. "SikaFilm", by Sika Corporation, Lyndhurst, NJ.

B. Final Curing: Curing compounds complying with ASTM C309 may be used in accordance with recommendations of ACI 506.7, "Specification for Concrete." Provide additional curing immediately following initial curing and before patch material has dried. Use one of following materials or methods:

1. Continue method used in initial curing.
2. Material conforming to ASTM C171.
3. Curing compounds conforming to ASTM C309.
4. Other moisture retaining covering as approved by Engineer.

5. Duration of Curing: Continue curing for first 7 days after patch placement. During initial and final curing periods maintain patch material above 50° F.
6. Prevent rapid drying at end of curing period.
7. Provide additional curing as required or recommended by manufacturer.

C. Curing Compound (VOC Compliant, less than 350 g/l): Comply with ASTM C 309, Type 1, Class A or B. Moisture loss shall be not more than 0.55 kg/m^2 when applied at 200 sq. ft/gal. Manufacturer's compatibility and certification is required. Silicate based compounds prohibited.

1. Subject to project requirements provide one of the following products:

   a. "Kurez DR VOX" or "Kurez RC," or "Kurez RC Off," Euclid Chemical Company.
   b. "RxCure WB," or "RxCure VOC" or "W.B. Cure VOC," Conspec Marketing & Manufacturing.
   c. "MasterKure CC 200 WB" or "MasterKure CC 160 WB" BASF Construction Chemicals, LLC.
   d. "MAPECURE DR", by MAPEI Corporation, Deerfield Beach, FL.

2. Additional requirements:

   a. With product submittal provide plan and procedures for removal of residual curing compound prior to application of sealers, coatings, stains, pavement markings and other finishes.

3.4 FIELD QUALITY CONTROL BY TESTING AGENCY

A. Concrete Compressive Strength:

1. Mold test cubes in the field in accordance ASTM C-31 and ASTM C-109 as follows and further below:

   a. Take a minimum of twelve (12), fifteen (15) if testing at 3 days cubes for each 10 cu ft, or fraction thereof, of each repair mortar placed in any one day.
   b. Use 2 in. x 2 in. cubes.
   c. Additional 2 cubes shall be taken and field cured under conditions of cold weather concreting, and when directed by Engineer.
   d. Cover specimens properly, immediately after finishing. Protect molds from contact with sources of water for first 24 hours after molding.

2. Fabricate and cure test cubes per ASTM C-109, except as follows:

   a. Do not remove specimens from molds before 24 hours.
   b. To verify 7 and 28-day compressive strengths:

      1) During first 24 hours after molding, store test specimens under conditions that maintain temperature immediately adjacent to specimens in range of 60 to 80° F. and prevent loss of moisture from specimens.
      2) Remove test specimens from molds at end of 24 hours and air dry in laboratory until moment of test.

   c. To verify compressive strength of test cubes required due to cold weather concreting conditions:

1) Store test specimens on structure as near to point of sampling as possible and protect from elements in same manner as that given to portion of structure as specimen represents.
2) Transport to test laboratory no more than 4 hours before testing. Remove molds from specimens immediately before testing.

3. Compression Test:

a. Test 3 cubes at 1 day (Mandatory).
b. Test 3 cubes at 7 days (Mandatory).
c. Test 3 cubes at 28 days (Mandatory).
d. Hold 3 cubes in reserve for use as Engineer directs.

4. Unless notified by Engineer, reserve cubes may be discarded without being tested after 56 days.

3.5 EVALUATION AND ACCEPTANCE OF TROWEL APPLIED MORTAR REPAIRS

A. Acceptance of Repairs (ACI 301):

1. Acceptance of completed concrete Work will be according to provisions of ACI 301.
2. Patched areas shall be sounded by Engineer and Contractor with hammer or rod after curing for 72 hours. Contractor shall repair all hollowness detected by removing and replacing patch or affected area at no extra cost to Owner.
3. If shrinkage cracks appear in patch area when initial curing period is completed, patch shall be considered defective, and it shall be removed and replaced by Contractor at no extra cost.

END OF SECTION 033760

SECTION 037000 - LATEX MODIFIED CONCRETE AND MORTAR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes the provision of all labor, materials, and equipment necessary for production and installation of latex modified concrete or mortar for patching floor spalls.

B. Related Sections: Following Sections contain requirements that relate to this Section:

1. Division 2 Section “Surface Preparation for Patching."
2. Division 7 Section "Waterproofing System."

1.3 QUALITY ASSURANCE

A. Work shall conform to requirements of ACI 301 and ACI 318 except where more stringent requirements are shown on Drawings or specified in this Section.

B. Testing Agency:

1. Independent testing laboratory employed by Owner and acceptable to Engineer.
2. Accredited by AASHTO under ASTM C1077. Testing laboratory shall submit documented proof of ability to perform required tests.

C. Sampling and testing of concrete and mortar shall be performed by ACI certified Concrete Field Technicians Grade I. Certification shall be no more than 3 yrs. old.

D. Testing Agency is responsible for conducting, monitoring and reporting results of all tests required under this Section. Testing Agency has authority to reject concrete or mortar not meeting Specifications.

E. Proportioning, production, placement and finishing of latex modified concrete or mortar shall be overseen by, and have approval of, latex manufacturer. Latex admixture supplier shall make available qualified individual experienced in placement of latex modified concrete patches, to aid Contractor during placement of all latex modified concrete patches. Qualification of supplier's representative shall be acceptable to Engineer.

F. Testing Agency shall submit following information for field testing of concrete unless modified in writing by Engineer:

1. Project name and location.

2. Contractor's name.
3. Testing Agency's name, address and phone number.
4. Concrete supplier.
5. Date of report.
6. Testing Agency technician's name (sampling and testing).
7. Placement location within structure.
8. Concrete mix data (quantity and type):
    a. Cement.
    b. Fine aggregates.
    c. Coarse aggregates.
    d. Water.
    e. Water/cement ratio.
    f. Latex emulsion.
    g. Latex emulsion per cu yd of concrete.
    h. Other admixtures.
9. Weather data:
    a. Air temperatures.
    b. Weather.
    c. Wind speed.
10. Field test data:
    a. Date, time and place of test.
    b. Slump.
    c. Air content.
    d. Unit weight.
    e. Concrete temperature.
11. Compressive test data:
    a. Cylinder number.
    b. Age of concrete when tested.
    c. Date and time of cylinder test.
    d. Curing time (field and lab).
    e. Compressive strength.
    f. Type of break.

1.4 REFERENCES

A. American Concrete Institute (ACI):

1. ACI 214, "Recommended Practice for Evaluation of Strength Test Results of Concrete."
2. ACI 301, "Standard Specifications for Structural Concrete."
3. ACI 302.1R, "Guide for Concrete Floor and Slab Construction."
4. ACI 305R, "Hot Weather Concreting."
5. ACI 306R, "Cold Weather Concreting."
6. ACI 306.1, "Standard Specification for Cold Weather Concreting."
7. ACI 318, "Building Code Requirements for Reinforced Concrete."
8. ACI 347, "Recommended Practice for Concrete Formwork."

B. American Society for Testing and Materials (ASTM):

1. ASTM C31, "Method of Making and Curing Concrete Test Specimens in the Field."
2. ASTM C33, "Specification for Concrete Aggregates."
3. ASTM C39, "Test Method for Compressive Strength of Cylindrical Concrete Specimens."
4. ASTM C94, "Specification for Ready-Mixed Concrete."
5. ASTM C109, "Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens)."
6. ASTM C138, "Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete."
7. ASTM C143, "Test Method for Slump of Portland Cement Concrete."
8. ASTM C150, "Specification for Portland Cement."
9. ASTM C172, "Method of Sampling Freshly Mixed Concrete."
10. ASTM C173, "Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method."
11. ASTM C231, "Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method."
12. ASTM C260, "Specification for Air-Entraining Admixtures for Concrete."
13. ASTM C494, "Specification for Chemical Admixtures for Concrete."
14. ASTM C685, "Specification for Concrete Made by Volumetric Batching and Continuous Mixing."
15. ASTM C1040, "Standard Test Method for Density of Unhardened and Hardened Concrete by Nuclear Methods."
16. ASTM C1077, "Standard Practice for Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation."
17. ASTM C1218, "Sampling and Testing for Water Soluble Chloride Ion in Concrete and Concrete Raw Materials."

C. Concrete Reinforcing Steel Institute (CRSI):

1. CRSI MSP, "Manual of Standard Practice."

D. Contractor shall have following ACI publications at Project construction site:

1. ACI SP-15, "Standard Specifications for Structural Concrete ACI 301 with selected ACI and ASTM References."
2. ACI 302.1R, "Guide for Concrete Floor and Slab Construction."
3. ACI 305R, "Hot Weather Concreting."
4. ACI 306R, "Cold Weather Concreting."
5. ACI 306.1, "Standard Specification for Cold Weather Concreting."

1.5 SUBMITTALS

A. Make submittals in accordance with requirements of Division 1 of this Specification, and as herein specified.

B. Contractor shall submit concrete mix design reviewed by latex manufacturer to Engineer 2 weeks prior to placing concrete. Use mix design submittal form included at end of this Section. Proportion mix designs as defined in ACI 301, 4.2.3. Include following information for each concrete mix design:

1. Method used to determine proposed mix design (per ACI 301, 4.2.3).
2. Gradation of fine and coarse aggregates: ASTM C33.
3. Proportions of all ingredients including all admixtures added either at time of batching or at job site.
4. Water-cement ratio.
5. Slump: ASTM C143.
6. Certification of chloride content of admixtures.
7. Air content of freshly mixed concrete by pressure method, ASTM C231.
8. Unit weight of concrete: ASTM C138.
9. Strength at 3 and 28 days.
10. Water-soluble chloride ion content of concrete per ASTM C1218.

C. Contractor: At preconcrete meeting, submit procedures to protect fresh concrete from rain and hot and cold weather conditions.

D. Testing Agency: Promptly report all concrete test results to Engineer, Contractor and concrete supplier. Include following information:

1. See Article "Quality Assurance," paragraph "Testing Agency shall submit...."
2. Weight of concrete, ASTM C138.
3. Slump, ASTM C143.
4. Air content of freshly mixed concrete by pressure method, ASTM C231 or volumetric method, ASTM C173.
5. Concrete temperature (at placement time).
6. Air temperature (at placement time).
7. Strength determined in accordance with ASTM C39.

E. Concrete batched on-site shall be placed and finished within 30 minutes of adding water to mixture.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aggregates (ACI 301, Article 4.2.1):

1. Normal weight concrete aggregates:

a. Coarse aggregate: Crushed and graded limestone or approved equivalent conforming to ASTM C33, Class Designation 5S.
b. Fine aggregate: Natural sand conforming to ASTM C33 and having preferred grading shown for normal weight aggregate in ACI 302.1R, Table 4.2.1.

2. Coarse aggregate: Nominal sizes indicated below, conforming to ASTM C33, Table 2:

a. 0.375 in. for patch cavities 0.75 to 1.5 in. deep.
b. 0.5 in. for patch cavities greater than 1.5 in. deep.

3. Chloride Ion Level: Chloride ion content of aggregates shall be tested by laboratory making trial mixes. Also, total water-soluble chloride ion content of

mix including all constituents shall not exceed 0.06% chloride ions by weight of cement. Test to determine chloride ion content shall conform to Test Method ASTM C1218.

B. Cement (ACI 301, 4.2.1.1):

1. Portland cement, Type I, ASTM C150. Use 1 cement clinker source throughout project. No change in brand without prior written approval from Engineer.

C. Water (ACI 301, 4.2.1.3):

1. ASTM C94.

D. Latex Emulsion:

1. "Dow Reichhold Modifier A/NA," Dow Reichhold Chemical Specialty Latex LLC, Research Triangle Park, N.CI.
2. "Styrofan 1186," BASF Corporation, Chattanooga, TN.

E. Admixtures (ACI 301, 4.2.1.4):

1. Only admixtures listed shall be acceptable. Do not submit alternates.
2. Concrete supplier and manufacturer shall certify compatibility of all ingredients in each mix design.
3. Use admixtures in strict accordance with manufacturer's recommendations.
4. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than 0.5% chloride ions, by weight of admixture, are not permitted. Additionally, each admixture shall not contribute more than 5 ppm, by weight, of chloride ions to total concrete constituents.

F. Storage of Materials (ACI 301, 4.1.4).

2.2 CONCRETE MIX DESIGN

A. Selection of concrete proportions shall be in accordance with ACI 301, 4.2.3.1. Before any concrete is placed for project, Contractor shall submit to Engineer data showing method used for determining proposed concrete mix design, including fine and coarse aggregate gradations, proportions of all ingredients, water-cement ratio, slump, air content, cylinder breaks and other required data specified in Article "Submittals," second paragraph for each different concrete type specified. Mix design shall meet following minimum requirements:

Compressive Strength	4500 psi @ 28 days (2500 psi @ 3 days)
Water-Cement Ratio	0.25 to 0.40
Latex Content Per Sack of Cement	3.5 gal.
Slump*	4 in. ± 2 in.
Cement Content	658-800 lb./cu. yd.
Air Content	4% - 8%

*For concrete placed by vibratory screeds, slump shall not exceed 4 in. at point of deposit.

B. Chloride Ion Level: See Article "Materials," paragraph "Chloride Ion Level."

C. Bonding Grout: Bonding grout shall consist of sand, cement, and latex emulsion in proportions similar to mortar in concrete with sufficient water to form stiff slurry to achieve consistency of "pancake batter."

PART 3 - EXECUTION

3.1 PRODUCTION OF MORTAR OR CONCRETE

A. Production of latex modified mortar or concrete shall be in accordance with requirements of ACI 301, 4.3.1, except as otherwise specified herein.

B. Concrete or mortar, mixed at site, shall be proportioned by continuous mixer used in conjunction with volumetric proportioning. Volumetric batching/continuous mixers shall conform to ASTM C685. In addition, self-contained, mobile, continuous type mixing equipment shall comply with following:

1. Mixer shall be capable of producing batches of not less than 6 cu. yd.
2. Mixer shall be capable of positive measurement of cement being introduced into mix. Recording meter visible at all times and equipped with ticket printout shall indicate this quantity.
3. Mixer shall provide positive control of flow of water into mixing chamber. Water flow shall be indicated by flow meter and shall be readily adjustable to provide for minor variations in aggregate moisture.
4. Mixer shall be capable of being calibrated to automatically proportion and blend all components of indicated composition on continuous or intermittent basis, as required by finishing operation, and shall discharge mixed material through conventional chute into transporting device or directly in front of finishing machine. Sufficient mixing capacity of mixers shall be provided to permit intended pour to be placed without interruption.
5. Mixer shall be calibrated to accurately proportion specified mix. Yield is required to be within tolerance of 1.0 %.

C. On-site mortar or concrete batching in mixer of at least 0.125 cu yd capacity shall be permitted only with approval of Engineer. On-site concrete batching and mixing shall comply with requirements of ACI 301, 4.3.1.

3.2 PREPARATION (ACI 301, 5.3.1)

A. Cavity surfaces shall be clean and dry prior to commencement of patch installation. Preparation of surfaces to receive new concrete shall be in accordance with Section "Surface Preparation for Patching."

B. Bonding Grout:

1. Bonding grout shall be applied to damp (but not saturated) concrete surface in uniform thickness of 0.0625 in. to 0.125 in. over all surfaces to receive patching.
2. Grout shall not be allowed to dry or dust prior to placement of patch material. If concrete placement is delayed and the coating dries, cavity or surface shall not be patched until it has been recleaned and prepared as specified in Section "Surface Preparation for Patching." Grout shall not be applied to more area than can be patched within 0.5 hr by available manpower.

C. Receive Owner's and Engineer's written approval of concrete surface finish used on flatwork before beginning of construction.

3.3 INSTALLATION

A. Placing (ACI 301, 5.3.2):

1. Do not place concrete when temperature of surrounding patch area or air is less than 50° F. unless following conditions are met:

    a. Place concrete only when temperature of surrounding air is expected to be above 45° F. for at least 36 hrs.
    b. When above conditions are not met, concrete may be placed only if insulation or heating enclosures are provided in accordance with ACI 306, "Recommended Practice for Cold Weather Concreting." Submit proposed protective measures in writing for Engineer's review prior to concrete placement.
    c. Cost for precautionary measures required shall be borne by Contractor.

2. Concrete shall be manipulated and struck off slightly above final grade. Concrete shall then be consolidated and finished to final grade with internal and surface vibration devices. Proposed consolidation method shall be submitted for Engineer's review prior to concrete placement.

    a. Do not place concrete if mix temperature exceeds 85° F.
    b. Do not place concrete under hot weather conditions. Hot weather is defined as air temperature which exceeds 80° F. or any combination of high temperature, low humidity and high wind velocity which causes evaporation rates in excess of 0.10 psf per hr as determined by ACI 305R, Figure 2.1.5.

3. Fresh concrete 3 in. or more in thickness shall be vibrated internally in addition to surface vibration.
4. Concrete shall be deposited as close to its final position as possible. All concrete shall be placed in continuous operation and terminated only at bulkheads or designated control or construction joints.
5. On ramps with greater than 5 % slope, all concreting shall begin at low point and end at high point. Contractor shall make any necessary adjustment to slump or equipment to provide wearing surface without any irregularities or roughness.

B. Finishing (ACI 301, 5.3):

1. Flatwork (BROOM Finish, 5.3.4.2.d):

    a. When tight and uniform concrete surface has been achieved by screeding and finishing operation, give slab surface coarse transverse scored texture by drawing broom across surface. Texture shall be accepted by Owner and Engineer from sample panels.
    b. Finishing tolerance: ACI 301, 5.3.4.2; Class B tolerance.
    c. Finish all concrete surfaces to proper elevations to insure that all surface moisture will drain freely to floor drains, and that no puddle areas exist.

Contractor shall bear cost of any corrections to provide for positive drainage.

C. Joints in Concrete (ACI 301, 2.2.2.5):

1. Construction, control and isolation joints as detailed on Drawings:

a. Tool joints at time of finishing. Sawcut joints are prohibited.
b. Isolation joints - interrupt structural continuity resulting from bond, reinforcement or keyway.
c. Coordinate configuration of tooled joints with control joint sealants.

D. Curing:

1. Latex modified mortar and concrete shall be cured according to latex manufacturer's recommendations and according to minimum requirements:

a. Surface shall be covered with single layer of clean, wet burlap as soon as surface will support it without deformation. Cover burlap with continuous single thickness of polyethylene film for 24 hrs.
b. After 24 hrs remove polyethylene film and allow burlap to dry slowly for an additional 24 to 48 hrs.
c. Remove burlap and allow concrete to air dry for an additional 48 hrs.
d. Curing time shall be extended, as Engineer directs, when curing temperature falls below 50° F.

E. Repair of Defects (ACI 301, 5.3.7):

1. Repair all surface defects exceeding 0.25 in. width or depth.
2. Match color of concrete to be repaired.
3. Submit samples of materials and relevant literature and test data on proprietary compounds and procedures used for adhesion or patching ingredients to Engineer for its review before patching concrete.
4. Receive written approval of Engineer of method and materials prior to making repairs to concrete.

3.4 FIELD QUALITY CONTROL BY TESTING AGENCY (ACI 301, 1.6)

A. Air Content:

1. Sample freshly-mixed concrete per ASTM C172 and conduct 1 air content test per ASTM C231 or ASTM C173 for each 10 cu yds of concrete placed or each day's production, whichever is less.

B. Concrete Compressive Strength:

1. Mold test cylinders in accordance with ASTM C31 and test in accordance with ASTM C31 as follows:

a. Take minimum of 6 cylinders for each 25 cu yds or fraction thereof, of each mix design of concrete placed in any 1 day. Use of 4 in. x 8 in. cylinders in lieu of standard cylinders is acceptable.
b. Additional 2 cylinders shall be taken and field cured under conditions of

cold weather concreting, and when directed by Engineer.

2. Cover specimens properly, immediately after finishing. Protect outside surfaces of cardboard molds, if used, from contact with sources of water for first 24 hrs after molding.
3. Fabricate and cure test cylinders per ASTM C31, except as follows:

    a. To verify compressive strength, test cylinders required due to cold weather concreting conditions:

        1) Store test specimens on structure as near to point of sampling as possible and protect from elements in same manner as that given to portion of structure as specimen represents.
        2) Transport to test laboratory no more than 4 hrs before testing. Remove molds from specimens immediately before testing.

    b. To verify 28-day compressive strength:

        1) During first 24 hrs after molding, store test specimens under conditions that maintain temperature immediately adjacent to specimens in range of 60 to 80° F. and prevent loss of moisture from specimens.
        2) Remove test specimens from molds at end of 20 ± 4 hrs and store at 73 ± 3° F., 50 ±4% relative humidity in laboratory until moment of test.

4. Compression tests:

    a. Test 2 cylinders at 3 days.
    b. Test 2 cylinders at 28 days.
    c. Hold 2 cylinders in reserve for use as Engineer directs.

5. Unless notified by Engineer, reserve cylinders may be discarded without being tested after 56 days.

C. Slump Test:

1. Conduct 1 slump test in accordance with ASTM C143 for each 10 yards of concrete placed on Project.

D. Yield and Proportioning Tests (ASTM C685):

1. When concrete placements involve more than 100 cu yds, accuracy of on-site batching equipment output indicators shall be verified at 50 cu yd intervals.
2. Accuracy of on-site batching equipment proportioning of concrete mixture shall be verified at 100 cu yd intervals.

E. Evaluation and Acceptance of Concrete (ACI 301, 1.6.7 and ACI 318, 4.7):

1. Concrete compression tests will be evaluated by Engineer in accordance with ACI 301, 1.6.7. If number of tests conducted is inadequate for evaluation of concrete or test results for any type of concrete fail to meet specified strength requirements, core tests may be required as directed by Engineer.

2. Core tests, when required, per ACI 301, 1.6.7.3.
3. Should tested hardened concrete meet these specifications, Owner will pay for coring and testing of hardened concrete. Should tested hardened concrete not meet these specifications, concrete contractor will pay for coring and testing of hardened concrete and for any corrective action required for unaccepted concrete.

F. Acceptance of Structure (ACI 301,1.7):

1. Acceptance of completed concrete Work will be according to provisions of ACI 301, 1.7.
2. Patched areas shall be sounded by Contractor with chain drag after curing for 7 days. Contractor shall repair all hollowness detected by removing and replacing patch or affected area at no extra cost to Owner.
3. If shrinkage cracks appear in patch when initial 24 hrs curing period is completed, patch shall be considered defective, and it shall be removed and replaced by Contractor at no extra cost.

END OF SECTION 03700

MIX DESIGN SUBMITTAL FORM
LATEX MODIFIED CONCRETE
(Submit separate form for each mix design)

I. GENERAL INFORMATION	
Project:	City:
General Contractor:	
Mix Design Identification No.:	
Use (Describe)[1]:	

[1] Floor Patching, Beam Repairs, etc.

II. MIX DESIGN PREPARATION:		
Mix Design Based on (Check one):	Standard Deviation Analysis: or	Trial Mix Test Data:
Design Characteristics:	Density: _____ pcf;	Air: _____ %
	Strength: _____ psi (28 day);	Slump _____ in.

WALKER ACCEPTANCE STAMP

III. MATERIALS:		
Aggregates: (size; type; source; gradation report; specification)		
Coarse:		
Fine:		
Other Materials:	Type	Product-Manufacturer (Source)
Cement:		
Latex Admixture:		
Other(s):		

IV. MIX PROPORTIONS (per yd^3)		
	WEIGHT (lbs.)	**ABSOLUTE VOL.** (cu. ft.)
Cement:		
Fine Aggregate: (1)		
Coarse Aggregate: (1)		
Latex:(2)		
Water: (3)		
(Other) _____:		
TOTALS:		

NOTES:

(1) Based on saturated surface dry weights of aggregates.

(2) Include only weight of solids portion of latex admixture. Confirm with manufacturer actual percentages of solids and water in suspension and coordinate with Note 3.

(3) Includes **ALL WATER**, including added water, free water contained on aggregates, and water suspension portion of latex admixture.

V. **RATIOS**	VI. **SPECIFIC GRAVITIES**
Water[(4)] lb _____ = _____ =_____	Fine Aggregate:
Cement lb	Coarse Aggregate:

VII. **ADMIXTURES**		
Air Entraining Agent (A.E.A.):	_____ oz.	per 100# cement
Water Reducer	_____ oz.	per 100# cement
Latex Emulsion	_____ gal	per sack cement
Other(s)		

VIII. **STANDARD DEVIATION ANALYSIS:**	**Yes**	**N/A**
(Complete this section only if mix design was developed using standard deviation analysis of previous project test results. If other method was used, check "N/A".)		
Number of Test Cylinders Evaluated:	Standard Deviation:	
Mix Designs Proportioned to Achieve f'cr = f'c + _____ psi		

NOTE:
Mix designs shall be proportioned to achieve f'cr equal to or greater than the larger of
f'cr = f'c + 1.34s [s= calculated standard deviation]
or
f'cr = f'c + 2.33s - 500
(Refer to ACI 301 for increased deviation factor when less than 30 tests are available.)

IX. TRIAL MIXTURE TEST DATA:	Yes	N/A

(Complete this section only if mix design is based on data from trial test mixture(s) batched by testing agency or Contractor. If other method was used, check "N/A".)

Age (days)	Trial Mix #1 (comp. str.)	Trial Mix #2 (comp. str.)	Trial Mix #3 (comp. str.)
7			
7			
28			
28			

28 day average compressive strength: _____ psi

DESIGN MIX CHARACTERISTICS

Slump = _____ in.	Air Content = _____ %
Unit Wet Wt. = _____ pcf	Unit Dry Wt. = _____ pcf

Mix Design Proportioned to Achieve: f'c + 1200 psi
(1200 psi increases to 1400 psi when f'c > 5000 psi)

ACTUAL MIX CHARACTERISTICS

Initial Slump = _____ in.	Final Slump _____ in.
Unit Wet Wt.= _____ pcf.	Unit Dry Wt. = _____ pcf
Air Content = _____ %	

X. OTHER REQUIRED TESTS

Soluble Chloride Ion Content of mix: _____ (by weight of cement)
(Water soluble by ASTM 1218 OR AASHTO T260)

XI. Remarks:

Submitted by:

Latex Modified Concrete Supplier
Name:
Address:
Phone Number:
Date:

My signature below certifies that I have read, understood, and will comply with the requirements of this Section.

Signature_____

Typed or Printed Name _____

REQUIRED ATTACHMENTS	
	Coarse aggregate grading report
	Fine aggregate grading report
	Concrete compressive strength data used for standard deviation calculations
	Chloride ion data and related calculations
	Admixture compatibility certification letter

INSTRUCTIONS:

1. Fill in all blank spaces. Use -0- (Zero) or N.A. (Not Applicable) where appropriate. See "Design and Control of Concrete Mixtures: 13th Edition by Portland Cement Association, for assistance in completing this form.
2. Provide the necessary documentation to support any laboratory test results or compliance to standard ASTM test methods or specifications referenced in the mix design submittal form.
3. If mix design utilizes multiple aggregate material sources, submit chloride ion content test data of each component from material suppliers. Test data shall be not more than 1 yr old.

Attach letter of certification that all admixtures, including latex admixture, are compatible for this mix design.

END OF SECTION 037000

SECTION 071800 – TRAFFIC COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. A single installer shall be responsible for providing complete water proofing system including all products specified in the following Sections:

1. Division 07 Section, “Traffic Coatings”
2. Division 07 Section, “Joint Sealants”
3. Division 07 Section, “Expansion Joint Assemblies”

B. This Section includes traffic topping: Fluid applied, waterproofing, traffic-bearing elastomeric membrane with integral wearing surface

C. Materials shall be compatible with materials or related Work with which they come into contact, and with materials covered by this Section.

D. Related Sections: Following Sections contain requirements that relate to this Section.

1. Division 07 Section, “Concrete Joint Sealants”
2. Division 07 Section, “Expansion Joint Assemblies”

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Materials shall be compatible with materials or related Work with which they come into contact, and with materials covered by this Section.
2. Distribute reviewed submittals to all others whose Work is related.

B. Pre-installation Conference: Meet at project site well in advance of time scheduled for Work to proceed to review requirements for Work and conditions that could interfere with successful topping performance. Require every party concerned with traffic topping Work, or required to coordinate with it or protect it thereafter, to attend. Include manufacturer's technical representative and warranty officer.

C. Submittals and Resubmittals: Engineer will review each of Contractor’s shop drawings and/or submittal data the initial time and, should resubmittal be required, one additional time to verify that reasons for resubmittal have been addressed by Contractor and corrections made. Resubmittal changes/revisions/corrections shall be circled. Engineer will review only circled items and will not be responsible for non-circled changes/revisions/corrections and additions.

D. Requests For Information

1. Engineer reserves the right to reject, unprocessed, any Request for Information (RFI) that the Engineer, at its sole discretion, deems frivolous.
2. Engineer reserves the right to reject, unprocessed, any RFI that the Engineer, at its sole discretion, deems already answered in the Contract Documents.
3. RFI process shall not be used for requesting substitutions. Procedures for substitutions are clearly specified elsewhere in the contract documents.

1.4 ACTION SUBMITTALS

A. Product Data: For each system indicated at least 30 days prior to application.

1. Product description, technical data, appropriate applications and limitations.
2. Primer type and application rate
3. Material, and wet mils required to obtain specified dry thickness for each coat.
4. Type, gradation and aggregate loading required within each coat.

B. Samples:

1. One 4 in. by 4 in. stepped sample showing each component for each system indicated.

C. Sample Warranty: For each system indicated.

1.5 INFORMATION SUBMITTALS

A. Certificates

1. Certification that products and installation comply with applicable federal, state of Minnesota, and local EPA, OSHA and VOC requirements regarding health and safety hazards.
2. Evidence of applicator's being certified by manufacturer. Evidence shall include complete copy of manufacturer’s licensing/certification document, spelling out repair responsibility for warranty claims.
3. Certification from the Manufacturer that finishes as specified are acceptable for system to be installed at least 1 month before placement of any concrete which will receive traffic topping.
4. Certification stating static coefficient of friction meets minimum requirements of Americans with Disabilities Act (ADA).
5. Certification stating materials have been tested and listed for UL 790 Class "A" rated materials/system by UL for traffic topping application specified on project. Containers shall bear UL labels.
6. Certification from manufacturer confirming compatibility with existing underlying coatings and/or substrate.

B. Manufacturer’s Instructions: for each system indicated.

1. Crack treatment and surface preparation method and acceptance criteria.
2. Method of application of each coat.
3. Maximum and minimum allowable times between coats.
4. Final cure time before resumption of parking and/or paint striping.
5. Any other special instructions required to ensure proper installation.

C. Field Quality Control:

1. Quality Control Plan as defined in Part 3.
2. Two copies each of manufacturer's technical representative's log for each visit.
3. Testing agency field reports.

D. Qualification Statements

1. Manufacturer’s qualifications as defined in the “Quality Assurance” article.
2. Installer’s qualifications as defined in the “Quality Assurance” article.
3. Signed statement from applicator certifying that applicator has read, understood, and shall comply with all requirements of this Section.

1.6 CLOSEOUT SUBMITTALS

A. Three copies of System Maintenance Manual.

B. Five copies of snow removal guidelines for areas covered by Warranty.

C. Final executed Warranty.

1.7 QUALITY ASSURANCE

A. Manufacturer’s Qualifications: Owner retains right to reject any manufacturer.

1. Evidence of acceptable previous work on WALKER-designed projects. If none, so state.
2. Evidence of financial stability acceptable to Engineer.
3. Listing of 20 or more projects completed with submitted system, to include:
    a. Name and location of project.
    b. Type of system applied.
    c. On-Site contact with phone number.

B. Manufacturer's technical representative, acceptable to Engineer, shall be on site during surface preparation and initial stages of installation.

C. Installer’s Qualifications: Owner retains right to reject any manufacturer.

1. Evidence of compliance with Summary article paragraph "A single installer. . ."
2. Evidence that installer has successfully performed or has qualified staff who have successfully performed at least 5 verifiable years of installations similar to those involved in this Contract, and minimum 10 projects with submitted system.
3. Listing of 5 or more installations in climate and size similar to this Project performed by installer’s superintendent.

D. Testing Agency: Independent testing laboratory employed by Owner and acceptable to Engineer.

E. Certifications

1. Traffic Topping shall satisfy the current National Volatile Organic Compound (VOC) Emission Standards for Architectural Coatings.

2. Licensing/certification document from manufacturer that confirms system installer is a licensed/certified applicator for the manufacturer and is legally licensed to perform work in the state of Minnesota.
3. Licensing/certification agreement shall include following information:
    a. Applicator's financial responsibility for warranty burden under agreement terms.
    b. Manufacturer's financial responsibility for warranty burden under agreement terms.
    c. Process for dispute settlement between manufacturer and applicator in case of system failures where cause is not evident or cannot be assigned.
    d. Authorized signatures for both Applicator Company and Manufacturer.
    e. Commencement date of agreement and expiration date (if applicable).

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver all materials to site in original, unopened containers, bearing following information:

1. Name of product.
2. Name of manufacturer.
3. Date of preparation.
4. Lot or batch number.

B. Store materials under cover and protect from weather. Replace packages or materials showing any signs of damage with new material at no additional cost to Owner.

C. At no time shall weight of stored material being placed on slab area exceed 50 psf design load of slab area.

1.9 FIELD CONDITIONS

A. Weather and Substrate Conditions: Proceed with work only when existing and forecast weather and temperature of concrete substrate will permit work in accordance with manufacturer's recommendations.

1.10 WARRANTY

A. System Manufacturer: Furnish Owner with written total responsibility Joint and Several Warranty, detailing responsibilities of manufacturer and applicator with regard to warranty requirements (Joint and Several). The warranty shall provide that system will be free of defects, water penetration and chemical damage related to system design, workmanship or material deficiency, consisting of:

1. Any adhesive or cohesive failures.
2. Spalling surfaces.
3. Weathering.
4. Surface crazing (does not apply to traffic topping protection course).
5. Abrasion or tear failure resulting from normal traffic use.
6. Failure to bridge cracks less than 0.0625 in. or cracks existing at time of traffic topping installation.

B. If material surface shows any of defects listed above, supply labor and material to repair all defective areas and to repaint all damaged line stripes.

C. Warranty period shall be a 5 year Joint and Several Warranty commencing with date of acceptance of work.

D. Perform any repair under this warranty at no cost to Owner.

E. Address the following in the terms of the Warranty: length of warranty, change in value of warranty – if any- based on length of remaining warranty period, transferability of warranty, responsibilities of each party, notification procedures, dispute resolution procedures, and limitations of liability for direct and consequential damages.

F. Snowplows, vandalism and abnormally abrasive maintenance equipment are not normal traffic use and are exempted from warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products of 1 of following, only where specifically named in product category:

1. Advanced Polymer Technology (APT), Harmony, PA
2. BASF Building Systems (BASF), Shakopee, MN
3. Deneef Construction Chemicals (Deneef), Houston, TX.
4. Lymtal International Inc. (Lymtal), Lake Orion, MI.
5. Neogard Division of Jones-Blair Company (Neogard), Dallas, TX.
6. Poly-Carb Inc. (Poly-Carb), Solon, OH.
7. Sika Corporation (Sika), Lyndhurst, NJ.
8. Technical Barrier Systems, Inc. (TBS), Oakville, Ontario.
9. Tremco (Tremco), Cleveland, OH.

2.2 MATERIALS, TRAFFIC TOPPING

A. Acceptable toppings are listed below. Toppings shall be compatible with all other materials in this Section and related work.

1. VOC Compliant, **Extreme** Low Odor, High-Solids (100%), Heavy Duty Coating System):

    a. AutoGard FC HD-48, Autogard E, Neogard.
    b. Flexodeck Mark 170.2, Poly-Carb.
    c. Iso-Flex 760 U HL AR and 760 U HL AL, Lymtal.
    d. Kelmar FCW III, exposure 2 or 3, TBS.
    e. MasterSeal Traffic 2500, BASF.
    f. Qualideck Heavy Vehicular HD-80 (152/252/372/512), APT
    g. Sikalastic 720/745, Sika.
    h. Vulkem 360NF/950NF and 951NF, Tremco.

B. Provide complete traffic topping system with all components specified for new, heavy-duty applications, including all waterproofing and wearing courses.

C. Provide ultraviolet screening for all traffic topping placed on this project.

D. Sand load wear coat to rejection.

E. Finish top coat shall be colored grey.

F. Substitutions: **None** for this project. Contact Engineer for consideration for future projects.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive Work and report immediately in writing to Engineer any deficiencies in surface which render it unsuitable for proper execution of Work.

B. Coordinate and verify that related Work meets following requirements before beginning surface preparation and application:

1. Concrete surfaces are finished as acceptable for system to be installed. Correct all high points, ridges, and other defects in a manner acceptable to the Manufacturer’s Representative and Engineer.
2. Curing compounds used on concrete surfaces are compatible with system to be installed.
3. Concrete surfaces have completed proper curing period for system selected.
4. Joint Sealants are compatible with traffic toppings.

3.2 PREPARATION

A. Seal all openings to occupied space to prevent cleaning materials, solvents and fumes from infiltration. All protective measures and/or ventilating systems required to prevent infiltration are incidental to this Work.

B. Acid etching is prohibited.

C. Remove all laitance and surface contaminants, including oil, grease and dirt by shotblasting. Prepare by sandblasting all surfaces inaccessible to shotblast equipment.

D. Before applying materials, apply system to small area to assure that it will adhere to substrate and joint sealants and dry properly and to evaluate appearance.

E. All cracks on concrete surface shall be prepared in accordance with manufacturer's recommendations.

F. All random cracks on concrete surface less than 0.03 in. wide and showing no evidence of water and/or salt water staining on ceiling below shall receive detail coat unless more complete treatment required in accordance with manufacturer's recommendations. Rout and seal random cracks, construction joints and control joints prior to installation of primer or base coat. Crack preparation including installation of joint sealant material, where required, is incidental to traffic topping work.

G. Mask off adjoining surfaces not to receive traffic topping and mask off drains to prevent spillage and migration of liquid materials outside membrane area. Provide neat/straight lines at termination of traffic topping.

3.3 INSTALLATION/APPLICATION

A. Do all Work in accordance with manufacturer's written instructions and specifications including, but not limited to, moisture content of substrate, atmospheric conditions (including relative humidity and temperature), coverages, mil thicknesses and texture, and as shown on Drawings.

B. A primer coat is required for all systems. No exception.

C. Do not apply traffic topping material until concrete has been air dried at temperatures at or above 40º F. for at least 30 days after curing period specified.

D. Cease material installation under adverse weather conditions, or when temperatures are outside manufacturers recommended limitations for installation, or when temperature of work area or substrate are below 40ºF.

E. All adjacent vertical surfaces shall be coated with traffic topping minimum of 4 in. above coated horizontal surface. Requirement includes, but is not limited to pipes, columns, walls, curbs (full height of vertical faces of all curbs) and islands.

F. Complete all Work under this Section before painting line stripes.

G. Clean off excess material and material smears adjacent to joints as work progresses using methods and materials approved by manufacturers.

3.4 FIELD QUALITY CONTROL

A. Develop a quality control plan for assured specified uniform membrane thickness that utilizes grid system of sufficiently small size to designate coverage area of not more than 5 gallons at specified thickness. In addition, employ wet mil gauge to continuously monitor thickness during application. Average specified wet mil thickness shall be maintained within grid during application with minimum thickness of not less than 80% of average acceptable thickness. Immediately apply more material to any area not maintaining these standards.

B. Testing Agency employ wet mil gauge to periodically monitor thickness during application.

C. Install 1 trial section of topping system for each duty grade specified. Do not proceed with further topping application until trial sections accepted in writing by Engineer. Remove and replace rejected trial sections with acceptable application. Trial section shall also be tested for:

1. Wet mil thickness application.
2. Adhesion to concrete substrate and/or existing coating(s).
3. Overall dry mil thickness.

D. Use trial sections to determine adequacy of pre-application surface cleaning. Obtain Owner, Engineer and manufacturer acceptance of cleaning before proceeding with topping application.

E. Determine overall topping system mil thickness:

1. Contractor shall provide 6 in. by 6 in. bond breaker (topping coupon) on concrete surface for each 25,000 sq ft, or fraction thereof, of topping to be placed as directed by Engineer and manufacturer. Dimensionally locate coupon for easy removal.
2. Contractor shall assist Testing Agency in removing topping coupons from concrete surface at completion of manufacturer-specified cure period. Contractor shall repair coupon area per topping manufacturer's instructions.
3. Testing Agency shall determine dry mil thickness of completed Traffic Topping System, including bond breaker. Take 9 readings (minimum), 3 by 3 pattern at 2 in. on center. No reading shall be taken closer than 1 in. from coupon edge. Report individual readings and overall topping system average to Engineer. Readings shall be made with micrometer or optical comparator.

END OF SECTION 071800

SECTION 079233 – CONCRETE JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. A single installer shall be responsible for providing complete water proofing system including all products specified in following Sections:

1. Division 07 Section, “Traffic Coatings”
2. Division 07 Section, “Concrete Joint Sealants”
3. Division 07 Section, “Expansion Joint Assemblies”

B. Related Sections: Following Sections contain requirements that relate to this Section.

1. Division 07 Section "Expansion Joint Assemblies."
2. Division 07 Section "Traffic Coatings."

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Materials shall be compatible with materials or related Work with which they come into contact, and with materials covered by this Section.
2. Distribute reviewed submittals to all others whose Work is related.

1.4 ACTION SUBMITTALS

A. Product Data: For each system indicated at least 60 days prior to application.

1. Product description, technical data, appropriate applications and limitations.
2. Primer type and application rate

B. Samples:

1. One for each system indicated.

C. Sample Warranty: For each system indicated.

1.5 INFORMATION SUBMITTALS

A. Certificates:

1. Evidence of installer's being certified by manufacturer. Evidence shall include complete copy of manufacturer’s licensing/certification document, spelling out repair responsibility for warranty claims.

2. Certification from Manufacturer that joint details as specified are acceptable for system to be installed at least 1 month before placement of any concrete which will receive joint sealant.

B. Field Quality Control:

1. Two copies each of manufacturer's technical representative's log for each visit.
2. Testing agency field and test reports.

C. Qualification Statements:

1. Manufacturer’s qualifications as defined in “Quality Assurance” article.
2. Installer’s qualifications as defined in “Quality Assurance” article.
3. Signed statement from this Section applicator certifying that applicator has read, understood, and shall comply with all requirements of this Section.

1.6 CLOSEOUT SUBMITTALS

A. Three copies of System Maintenance Manual.

B. Five copies of snow removal guidelines for areas covered by Warranty.

C. Final executed Warranty.

1.7 QUALITY ASSURANCE

A. Manufacturer’s Qualifications: Owner retains right to reject any manufacturer.

1. Evidence of acceptable previous work on WALKER-designed projects. If none, so state.
2. Evidence of financial stability acceptable to Engineer.
3. Listing of 20 or more projects completed with submitted system, to include:

    a. Name and location of project.
    b. Type of system applied.
    c. On-Site contact with phone number.

B. Manufacturer's technical representative, acceptable to Engineer, shall be on site during surface preparation and initial stages of installation.

C. Installer’s Qualifications: Owner retains right to reject any installer or subcontractor.

1. Installer shall be legally licensed to perform work in state of Minnesota**.** Evidence of compliance with Summary article paragraph "A single installer. . ."
2. Evidence that installer has successfully performed or has qualified staff who have successfully performed at least 5 verifiable years of installations similar to those involved in this Contract, and minimum 10 projects with submitted system.
3. Listing of 5 or more installations in climate and size similar to this Project performed by installer’s superintendent.

D. Testing Agency: Independent testing laboratory employed by Owner and acceptable to Engineer.

E. Certifications:

1. Licensing/certification document from system manufacturer that confirms system installer is a licensed/certified applicator for manufacturer
2. Licensing/certification agreement shall include following information:
    a. Applicator's financial responsibility for warranty burden under agreement terms.
    b. Manufacturer's financial responsibility for warranty burden under agreement terms.
    c. Process for dispute settlement between manufacturer and applicator in case of system failures where cause is not evident or cannot be assigned.
    d. Authorized signatures for both Applicator Company and Manufacturer.
    e. Commencement date of agreement and expiration date (if applicable).

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver all materials to site in original, unopened containers, bearing following information:

1. Name of product.
2. Name of manufacturer.
3. Date of preparation.
4. Lot or batch number.

B. Store materials under cover and protect from weather. Replace packages or materials showing any signs of damage with new material at no additional cost to Owner.

C. At no time shall weight of stored material being placed on slab area exceed design load of slab area.

1.9 FIELD CONDITIONS

A. Weather and Substrate Conditions: Proceed with work only when existing and forecast weather and temperature of concrete substrate will permit work in accordance with manufacturer's recommendations.

1.10 WARRANTY

A. System Manufacturer and Contractor shall furnish Owner written single source performance guarantee that joint sealant system will be free of defects, water penetration and chemical damage related to system design, workmanship or material deficiency, consisting of:

1. Any adhesive or cohesive failures.
2. Weathering.
3. Abrasion or tear failure resulting from normal traffic use.

B. If material surface shows any of defects listed above, supply labor and material to repair all defective areas and to repaint all damaged line stripes.

C. Warranty period shall be a 5 year period commencing with date of acceptance of work.

D. Perform any repair under this warranty at no cost to Owner.

E. Address following in terms of Warranty: length of warranty, change in value of warranty – if any- based on length of remaining warranty period, transferability of warranty, responsibilities of each party, notification procedures, dispute resolution procedures, and limitations of liability for direct and consequential damages.

F. Snowplows, vandalism, and abnormally abrasive maintenance equipment are not normal traffic use and are exempted from warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products of 1 of following, only where specifically named in product category:

1. BASF Building Systems (BASF), Shakopee, MN.
2. Dow Corning Corp. (Dow Corning), Midland, MI.
3. Lymtal International Inc. (Lymtal), Lake Orion, MI.
4. Pecora Corporation (Pecora), Harleysville, PA.
5. Sika Corporation (Sika), North Canton, OH.
6. Tremco (Tremco), Cleveland, OH.

2.2 MATERIALS, JOINT SEALANT SYSTEM

A. Provide complete system of compatible materials designed by manufacturer to produce waterproof, traffic-bearing control joints as detailed on Drawings.

B. Compounds used for sealants shall not stain masonry or concrete. Aluminum pigmented compounds not acceptable.

C. Color of sealants shall match adjacent surfaces.

D. Closed cell or reticulated backer rods: Acceptable products:

1. “Sof Rod,” Nomaco Inc., 501 NMC Drive, Zebulon, NC 27597. (800) 345-7279 ext. 341.
2. “ITP Soft Type Backer Rod,” Industrial Thermo Polymers Limited, 2316 Delaware Ave., Suite 216, Buffalo, NY 14216. (800) 387-3847.
3. “MasterSeal 921 Backer Rod,” BASF.

E. Bond breakers and fillers: as recommended by system manufacturer.

F. Primers: as recommended by sealant manufacturer.

G. Acceptable sealants are listed below. Sealants shall be compatible with all other materials in this Section and related work.

H. Acceptable polyurethane control joint sealants (traffic bearing):

1. MasterSeal SL-2 or MasterSeal SL-2 SG, BASF.
2. Iso-flex 880 GB or Iso-flex 881, Lymtal.
3. Dynatrol II-SG or Urexpan NR 200, Pecora.
4. Sikaflex-2c SL or Sikaflex-2c NS TG, Sika.
5. THC-900, THC-901, Vulkem 45SSL, Dymeric 240, Dymeric 240 FC or Dymonic 100, Tremco.

I. Acceptable polyurethane vertical and cove joints sealants (non-traffic bearing):

1. Sikaflex-2c NS, Sika.
2. MasterSeal NP-2, BASF.
3. Dymeric 240/240FC, Dymonic 100 or THC 901 (cove only), Tremco.
4. Dynatred, Pecora.
5. Iso-flex 881, Lymtal.

J. Proposed Substitutions: **None** for this project. Contact Engineer for consideration for future projects.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive Work and report immediately in writing to Engineer any deficiencies in surface which render it unsuitable for proper execution of Work.

B. Coordinate and verify that related Work meets following requirements before beginning installation.

1. Concrete surfaces are finished as acceptable for system to be installed.
2. Curing compounds used on concrete surfaces are compatible with system to be installed.
3. Concrete surfaces have completed proper curing period for system selected.

3.2 PREPARATION

A. Seal all openings to occupied space to prevent cleaning materials, solvents and fumes from infiltration. All protective measures and/or ventilating systems required to prevent infiltration are incidental to this Work.

B. Correct unsatisfactory conditions before installing sealant system.

C. Acid etching is prohibited.

D. Grind joint edges smooth and straight with beveled grinding wheel before sealing. All surfaces to receive sealant shall be dry and thoroughly cleaned of all loose particles, laitance, dirt, dust, oil, grease or other foreign matter. Obtain written approval of method from system manufacturer before beginning cleaning.

E. Final preparation of joints shall be a sandblast with medium that removes dust and ground material from surfaces to receive sealant.

F. Check preparation of substrate for adhesion of sealant.

G. Prime and seal joints and protect as required until sealant is fully cured. A primer coat is required for all systems.

3.3 INSTALLATION/APPLICATION

A. Do all Work in strict accordance with manufacturer's written instructions and specifications including, but not limited to, moisture content of substrate, atmospheric conditions (including relative humidity and temperature), thicknesses and texture, and as shown on Drawings.

B. Completely fill joint without sagging or smearing onto adjacent surfaces.

C. Fill horizontal joints slightly recessed to avoid direct contact with wheel traffic.

D. Clean off excess material and material smears adjacent to joints as work progresses using methods and materials approved by manufacturers.

E. Cease material installation under adverse weather conditions, or when temperatures are outside manufacturers recommended limitations for installation, or when temperature of work area or substrate are below 40ºF.

3.4 FIELD QUALITY CONTROL

A. Contractor and Engineer will jointly determine which one of following 2 methods of sealant testing to verify sealant profile:

1. Contractor, at Engineer's direction, shall cut out lesser of 1% of total lineal footage placed or total of 100 lineal ft of joint sealant at isolated/random locations (varying from in. to ft of material) for Engineer and Manufacturer's Representative inspection of sealant profile.
2. Contractor, at Engineer's direction, shall install 3 trial joint sections of 20 ft each. Contractor shall cut out joint sections, as selected by Engineer, for Engineer and Manufacturer's Representative inspection. Additional isolated/random removals may be required where sealant appears deficient. Total cut out sealant shall not exceed lesser of 1% of total lineal footage placed or total of 100 lineal ft of joint sealant at isolated/random locations (varying from inches to feet of material) for Engineer and Manufacturer's Representative inspection of sealant profile.

B. Repair all random joint sealant "cut out" sections at no cost to Owner.

C. Flood test joints where shown on Drawings.

D. Testing Agency:

1. Check shore hardness per ASTM standard specified in sealant manufacturer's printed data.
2. If flood test of joints required by this Section, report results to Engineer.

END OF SECTION 079233

SECTION 079500 – EXPANSION JOINT ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. A single installer shall be responsible for providing complete water proofing system including all products specified in the following Sections:

1. Division 07 Section, “Traffic Coatings”
2. Division 07 Section, “Water Repellents”
3. Division 07 Section, “Concrete Joint Sealants”
4. Division 07 Section, “Expansion Joint Assemblies”

B. This Section includes the following for maintenance, repair or system replacement:

1. Standard expansion joint systems:

a. Adhered extruded rubber joint system

1.3 DEFINITIONS

A. Maximum Joint Width: Widest linear gap a joint system tolerates and in which it performs its designed function without damaging its functional capabilities.

B. Minimum Joint Width: Narrowest linear gap a joint system tolerates and in which it performs its designed function without damaging its functional capabilities.

C. Movement Capability: Value obtained from the difference between widest and narrowest widths of a joint opening typically expressed in numerical values (mm or inches) or a percentage (plus or minus) of nominal value of joint width. Movement capability is to include anticipated movements from concrete shrinkage, concrete shortening and creep from post-tensioning or prestressing, cyclic thermal movements, and seismic movements.

D. Nominal Joint Width: Width of linear opening specified in practice and in which joint system is installed.

E. Nominal Form Width: Linear gap in joint system at time of forming or erection of structural elements bounding the expansion joint.

F. Service Load Level: Defined level of load under which joint assembly remains elastic and fully functional.

G. Fatigue Load Level: Defined level of load under which joint assembly remains elastic and fully functional, including all noise mitigation components, for the stated number of cycles.

H. Collapse Load Level: Defined level of load under which joint assembly remains capable of bridging the gap, although plates may yield and components may break.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General:

a. Coordinate and furnish anchorages, setting drawings, and instructions for installing joint systems. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of joint systems.
b. Coordinate requirements for transitions, tolerances, levelness, and plumbness to ensure the installed expansion joint system can perform with expected movement capabilities.
c. Coordinate and assign responsibility for preparation of concrete surfaces adjacent to expansion joints.
d. Expansion joint surface areas each side of joint gap shall have a vertical differential less than ¼" and meet requirements of expansion joint manufacturer.
e. Minor surface defects shall be repaired according to manufacturer's recommendations. Repair materials shall be compatible with intended system materials and shall be approved by the Engineer prior to surface preparation and installation.
f. Submit for approval repair products and procedures for all major defects. Repair description shall indicate materials, manufacturer's requirements, expected service life, and maintenance requirements. Take all precautions necessary to avoid damaging adjacent surfaces and embedded reinforcement. Contractor is responsible for any damages. Concrete repairs shall be of rectangular configuration, with no feather-edged surfaces. Final surface preparation of all repairs shall be sandblasting, or approved equivalent.
g. Coordinate layout of joint system and approval of methods for providing joints.

2. Joint Opening Width:

a. Use temperature adjustment table to properly size joint gap at time of concrete pour and show that proposed joint system is capable of equal individual and combined movements in each direction when installed at designated temperature, -20 to +130 degrees Fahrenheit.
b. Expansion joint movement capability and the actual joint gap movement may not coincide. Construct actual joint gap in accordance with expansion design criteria.

3. Blockouts:

    a. Float expansion joint blockouts to remove all air pockets, voids and spalls caused by form work.
    b. Blockouts shall be plumb with maximum tolerance per Manufacturer or not more than 0.125 inches deviation in 12 inches. Noncompliant blockouts shall be considered major defects.
    c. Blockouts shall be straight and true with maximum tolerance per Manufacturer. Noncompliant blockouts shall be considered major defects.

B. Make submittals in accordance with requirements of Division 01 Section, “Submittal Procedures:”

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated:

1. Construction details, material descriptions, dimensions, and finishes.
2. Proposed method of preparation of concrete surface to receive expansion joint systems.
3. Proposed method and details for treatment of cracks, bugholes, or other potential concrete surface defects in areas to receive expansion joint systems.
4. Horizontal spacing between embedded metals and plates to allow for volume change due to thermal conditions.
5. Temperature adjustment table showing formed gap at the time of concrete placement calculated at 10°F increments and a calculation showing joint system is capable of movement within the design temperature range.

B. Shop Drawings: For each type of product indicated:

1. Placement Drawings: Show project conditions including, but not limited to, line diagrams showing plans, elevations, sections, details, splices, blockout requirement, and terminations. Provide isometric or clearly detailed drawings depicting how components interconnect. Include reviewed and approved details from others whose work is related. Other information required to define joint placement or installation.
2. Joint System Schedule: Prepared by or under the supervision of the supplier. Include the following information in tabular form:

    a. Manufacturer and model number for each joint system.
    b. Joint system location cross-referenced to Drawings.
    c. Form width.
    d. Nominal joint width.
    e. Movement capability.
    f. Minimum and maximum joint width.
    g. Classification as thermal or seismic.
    h. Materials, colors, and finishes.
    i. Product options.
    j. Fire-resistance ratings.

3. Components and systems required to be designed by a professional engineer, shall bear such professional’s written approval when submitted.

C. Delegated Design Submittals:

1. Analysis indicating expansion joint system complies with expansion joint performance and design criteria of this specification and is suitable for use in conditions of this project. Provide a summary of design criteria used in design.

D. Test and Evaluation Reports:

1. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for current products.
2. ADA Certification: Prior to installation, submit written certification from manufacturer indicating that expansion joints conform to Americans with Disabilities Accessibility Guidelines for Buildings and Facilities, as published by U.S. Architectural & Transportation Barriers Compliance Board, 1331 F Street, N.W., Suite 1000, Washington, DC 20004-1111. 1-800-872-2253.

a. Submit test reports from accredited laboratory attesting to joint systems' movement capability and ADA compliance.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data

1. Maintenance Manual: 3 copies of System Maintenance Manual.
2. Five copies of snow removal guidelines for areas covered by warranty.

B. Warranty Documentation: 2 executed copies of Labor and Material Warranty including all terms, conditions and maintenance requirements.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Owner retains right to reject any manufacturer.

1. Evidence of compliance with Experience Record and Qualifications paragraph below.
2. Evidence of acceptable previous work on WALKER-designed projects. If none, so state.
3. Copy of sample warranty that meets the requirements of the "Warranty" article in Section 1.
4. Evidence of financial stability acceptable to Owner or Engineer.
5. Evidence of compliance with "Single Installer" requirement.

B. Experience Record and Qualifications: Verification of systems shall be established by either System Validation or Design Validation.

1. System Validation: Submitted system for similar applications with minimum five (5) years experience and five (5) verified projects completed. Validation submittal shall include:

a. Sealed design calculations by an engineer licensed in Minnesota, including finite element analysis for all structural load carrying elements, using the design criteria listed in Part 2.
b. Field history as defined below.

c. Results of seismic load tests defined below for projects with a Seismic Design Category of C or higher.

2. Design Validation: Submitted system for similar application with less than five (5) years experience shall include a design validation submittal. Validation submittal shall include:

a. Sealed design calculations by an engineer licensed in Minnesota, including finite element analysis for all structural load carrying elements, using the design criteria listed in Part 2.
b. Results of cyclic and seismic load tests defined below.

3. Acceptable field history consists of successful performance of five (5) installations in place over the previous five (5) years under similar project loads, traffic frequency, footprints, and joint sizes. Include sketches, photos, and references for each installation. Installations shall have experienced at least moderate levels of traffic.

C. Installer Qualifications: An employer of workers, including superintendent for this project, trained and approved by manufacturer.

D. Testing Agency: Independent testing laboratory employed by Owner and acceptable to Engineer.

E. Certifications

1. Provide reports to Owner detailing maintenance activities have been performed in accordance with written maintenance agreement for expansion joints.
2. Materials shall be compatible with materials or related Work with which they come into contact and the related materials sections.
3. Manufacturer/Applicator: Review and approve all details before construction. Confirm in writing to Owner.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver all materials to site in original, unopened containers, bearing following information:

1. Name of product.
2. Name of manufacturer.
3. Date of preparation.
4. Lot or batch number.

B. Store materials under cover and protect from weather. Replace packages or materials showing any signs of damage with new material at no additional cost to Owner.

1.9 WARRANTY

A. Warranty period shall be a five (5) year labor and materials warranty commencing with date of acceptance of work.

B. Installation Requirements: Include a written plan of construction and coordination requirements, to allow joint system installation to proceed with specified warranty, that specifically addresses the following:

1. Block out acceptance criteria.
2. Surface preparation acceptance criteria.
3. Crack, surface defect, and detailing recommendations.
4. Method of protection of surrounding surfaces.
5. Method of expansion joint system installation description.
6. Primer type and application rate.
7. Method of preparation of all glands and reinforced membranes.
8. Temperature, humidity and other weather constraints. Specify substrate moisture testing criteria, if any.
9. Final cure time before removal of protection, resumption of traffic, and/or paint striping.
10. Any other special instructions required to ensure proper installation.

C. Quality Service Requirements: Show evidence of licensed/approved installer. List of names, addresses and phone numbers, with copies of certification/approval agreement with each, satisfies requirement. Licensing/certification agreement shall include following information:

1. Installer's financial responsibility for warranty burden under agreement terms.
2. Manufacturer's financial responsibility for warranty burden under agreement terms.
3. Process for dispute settlement between manufacturer and installer in case of system failures where cause is not evident or cannot be assigned.
4. Authorized signatures for both Installer Company and Manufacturer.
5. Commencement date of agreement and expiration date (if applicable).
6. Provide copy of contractor's field application quality control procedures.

D. Warranty shall be jointly executed by Manufacturer and Installer for labor and materials. Detail responsibilities of General Contractor, manufacturer and installer with regard to warranty requirements, as outlined in the Manufacturer's warranty and related Licensing/Certification documents. Warranty shall provide that system shall be free of defects, water penetration and chemical damage related to system design, workmanship or material deficiency, consisting of:

1. Any water leakage through expansion joint system or leaking conditions of reinforced membrane, other waterproofing components, or glands.
2. Any adhesive or cohesive failures of the system.
3. Shifting of plates out of alignment due to system failure.
4. Loose plates, anchor blocks, bolts.
5. Metal to metal vibration causing noises during use.
6. Metal to non-metal vibration causing noises during use.
7. Tears, weathering, or degradation in gland from normal use.
8. Expansion joint glands are considered defective if they buckle upwards beyond the level of the floor surface after installation or downward in excess of ½ inch below the floor surface.

E. If expansion joint systems or components show any of defects listed above, supply labor and material to repair all defects at no cost to Owner.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. A single Installer shall be responsible for providing complete expansion joint system. Obtain all joint systems through one source from a single manufacturer.

B. Drawings indicate size, profiles, and dimensional requirements of joint systems and are schematic for systems indicated.

C. Do not modify intended aesthetic effects, as judged solely by Owner, except with Engineer's approval. If modifications are proposed, submit comprehensive explanatory data to Engineer for review.

2.2 PERFORMANCE REQUIREMENTS

A. Intent of this section is to insure that installed expansion joints allow pedestrian and vehicular traffic to pass in a smooth, quiet fashion with minimal maintenance required over a period of not less than 10 years. Expansion joints shall not only function as structural bridging elements, but must also accommodate structural expansions/contractions and minimize water leakage.

B. Provide design of expansion joint for preparation of final details for fabrication and construction of all concrete openings, expansion joint elements and required accessories. An integral part of this project is engineering for the following:

1. Include calculations for the size and forming of concrete openings to provide nominal joint width as indicated on drawings. Provide a summary of the design criteria used in the design.
2. Include calculations for the appropriate size of expansion joint elements in accordance with the expansion joint assembly performance criteria. Include installation requirements of expansion joint assembly for specific project conditions and scheduling. Provide a summary of design criteria used in design.

C. Expansion joint design shall meet or exceed all expected movements.

D. Installation temperature range and estimated volume change movements are shown on drawings. Nominal form width shown on the drawings shall be adjusted for the ambient temperature at time of concrete placement and designer shall verify that width of joint at installation shall meet minimum installation requirements.

E. Expansion joint systems shall be capable of resisting a differential vertical movement of ½ inch.

F. Materials shall be supplied in lengths to minimize or eliminate the need to splice waterproofing components.

1. Waterproofing materials directly exposed to vehicular traffic shall be supplied with no joints in vehicle drive aisles.
2. All mitered splices shall be performed at the factory and provide sufficient gland length for butt splicing with field splicing equipment.
3. All Santoprene butt to butt splices shall be heat welded.

4. Butt to butt splices with other materials shall be per manufacturer's recommendations.

G. Design system for passenger vehicles traveling at speeds normally expected within a parking structure.

H. Design system for passenger vehicles traveling at speeds higher than those expected in a parking structure.

I. Walking Surfaces: Expansion joint assemblies at walking areas subject to pedestrian traffic shall provide a smooth, slip resistant walking surface for pedestrians with these minimum requirements:

1. Shall provide walking surfaces in accordance with ASTM – F 1637 Standard Practice for Safe Walking Surfaces.
2. Shall be designed to comply with "Americans with Disabilities Act (ADA), Accessibility Guidelines (ADAAG)" and ICC A117.1. Americans with Disabilities Accessibility Guidelines for Buildings and Facilities, as published by U.S. Architectural & Transportation Barriers Compliance Board, 1331 F Street, N.W., Suite 1000, Washington, DC 20004-1111. 1–800-872-2253.
3. Adjoining walkway surfaces shall be flush and meet the following minimum requirements:

    a. Changes in level of less than ¼ inch in height may be without edge treatment as shown in ADA Figure 303.2.
    b. Changes in Level between ¼ inch and ½ inch in height shall be beveled with a slope no greater than 1:2 as shown in ADA Figure 303.3.
    c. Changes in level greater than ½ inch in height are not permitted unless they can be transitioned by means of a ramp.
    d. Openings in floor or ground surfaces shall not allow passage of a sphere more than ½ inch diameter except as allowed for elevators and platform lifts as shown in ADA Figure 302.3.

2.3 MANUFACTURERS

A. Subject to compliance with requirements, provide products from one of following manufacturers (listed in alphabetical order), only where specifically named in product categories:

1. Balco Inc., Wichita, KS (Balco).
2. Construction Specialties, Inc., Muncy, PA (C/S).
3. Dow Corning Corp., Midland, MI (Dow Corning).
4. Emseal Joint Systems, Westborough, MA (Emseal).
5. Erie Metal Specialties, Inc., Akron, NY (EMS).
6. Lymtal International Inc. Lake Orion, MI (Lymtal).
7. MM Systems Corporation, Atlanta, GA (MM).
8. TechStar, Inc., Findlay, OH (TechStar).
9. Tremco, Cleveland, OH (Tremco).
10. Watson Bowman Acme Corporation, a Division of BASF Construction Chemicals NA, Amherst, NY (WBA).

2.4 PRODUCTS, STANDARD EXPANSION JOINT SYSTEMS

A. Adhered extruded rubber expansion joint sealant system.

1. C/S Hybrid Compression Seal, Model HB, C/S.
2. Cebreg System, J or JP Series, EMS.
3. DuraFlex™ Elastic Seal ES Series, Balco.
4. Epoxy Bonded Sealing System, EBS Series, MM.
5. Iso-Flex Pressure Lok, Q Series, LymTal.
6. Jeene® Structural Sealing Joint System, WBA.
7. TechStar W-Seal; neoprene, TechStar.

B. Substitutions: **None** for this project. Contact Engineer for consideration for future projects.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces and blockouts where expansion joint systems will be installed for installation tolerances and other conditions affecting performance of Work.

B. Check elevations on each side of expansion joint gap to ensure flush slab-to-slab transition.

C. Check anticipated or actual minimum and maximum joint openings. Compare to manufacturer's movement specifications and make joint sizing recommendations.

D. Coordinate and verify that related Work meets following requirements:

1. Check adhesion to substrates and recommend appropriate preparatory measures.
2. Curing compounds used on concrete surfaces are compatible with Work to be installed.
3. Concrete surfaces have completed proper curing period for system selected.
4. Coordinate expansion joint system with other related Work before installation of expansion joint.
5. Verify expansion joints are compatible with Joint Sealants and traffic toppings.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

F. Cease installation if expansion joint blockouts and/or openings exhibit cracked edges, voids or spalls. Repair with approved material prior to installation of expansion joint.

G. Correct unsatisfactory conditions in manner acceptable to Manufacturer and Engineer before installing joint system.

H. Prepare for installation of expansion joint systems in accordance with manufacturer's recommendations

3.2 PREPARATION

A. Prepare for installation of expansion joint systems in accordance with manufacturer's recommendations

B. Surface Preparation:

1. Acid etching: Prohibited.
2. Prepare substrates according to joint system manufacturer's written instructions.
3. Clean joints thoroughly in accordance with manufacturer's instructions to remove all laitance, unsound concrete and curing compounds which may interfere with adhesion.

3.3 INSTALLATION

A. Comply with manufacturer's written instructions for storing, handling, and installing joint assemblies and materials unless more stringent requirements are indicated.

B. Proceed with work only when existing and forecast weather and temperature of concrete substrate will permit work in accordance with manufacturer's recommendations.

C. Cease material installation under adverse weather conditions, or when temperatures are outside manufacturers recommended limitations for installation, or when temperature of work area or substrate are below 40ºF.

D. During months when historic mean daily temperature at Project is more than 19° F. colder than annual mean daily temperature, premolded sealant shall be installed on temporary basis to prevent hot weather buckling. Provide permanent installation during acceptable weather conditions.

E. Terminate exposed ends of joint assemblies with field- or factory-fabricated termination devices.

F. Seal all openings to occupied spaces to prevent cleaning materials, solvents and fumes from infiltration. All protective measures and/or ventilating systems required to prevent infiltration are incidental to this Work.

G. Clean off excess material and material smears adjacent to joints as work progresses using methods and materials approved by manufacturer.

3.4 FIELD QUALITY CONTROL

A. Field Tests and Inspections: Prior to opening to traffic, test joint seal for leaks by maintaining continuously wet for 12 hours. Repair leaks revealed by examination of seal underside. Repeat test and repairs until all leaks stopped for full 12 hours.

B. Manufacturer Services: Provide qualified manufacturer’s technical representative for periodic inspection of Work at critical time of the installation, including but not limited to pre-concrete formwork and placement site meetings, block out inspection, surface defect repair, surface preparation, metal work, expansion gland installation and waterproofing system installation.

3.5 PROTECTION

A. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.

B. Protect installation from damage by work of other Sections. Where necessary due to heavy construction traffic, remove and properly store cover plates or seals and install temporary protection over joints. Reinstall cover plates or seals prior to Substantial Completion of Work.

3.6 MAINTENANCE

A. Provide separate line item bid price for 5 year maintenance program for vehicle rated seismic expansion joint system. The Maintenance Program includes observations, reports, and maintenance of all components for seismic expansion joint system.

END OF SECTION 079500

A. Structural Description

This parking structure is comprised of 7 levels of parking. The structural floor system is post-tensioned concrete slab and beams supported by cast-in-place concrete columns.

General

1. Drawings are based on information from original construction drawings provided by Owner. Original Design Drawings and Repair Drawings are available for review from Owner. Contractor shall make such investigations as it deems necessary in advance of bidding. Contractor shall promptly notify Owner/Engineer, in writing, of any discrepancies found between drawings and field conditions during construction.
2. Contractor is responsible for determining actual extent and locations of repair areas in accordance with drawings and specifications; Work Items and bubbles shown on drawings is shown only to represent types of deterioration and general location. Prior to fabrication of any material or placement of concrete, all Work Item quantities shall be marked and quantified by Contractor. Report quantities to Engineer. Contractor to receive written approval from Engineer prior to beginning work. Any work completed beyond approved quantities is at no cost to Owner.
3. Work Items are identified on Drawings as indicated in Legend on Sheet R001. Specification Section 004100 is the bid form for restoration. Section 020010 defines scope of work to be accomplished, referenced details, approved materials, referenced specification sections, and execution of work to be completed by a restoration contractor specializing in parking structure restoration.
4. Dimensions shown on plans are based on original construction documents. Contractor is required to field verify all conditions for purpose of preparing bid and performing work. Do not scale drawings.
5. Construction shall be in accordance with all applicable Federal, State of Minnesota and City of Rochester codes and ordinances, including Fire Codes.
6. All material properties shall be as noted in Specifications.

C. Details and Symbols

1. Details with clarification detail number other than 0 and labeled (FOR CLARIFICATION ONLY) do not represent a separate price item. These details supplement basic detail to provide additional information. In some cases these details show variation of typical condition.
2. Where Work Item bubble is noted "TYP", it means work item occurs at all locations where applicable deterioration or designation symbol occurs on that plan.
3. Where "Typical As Required" (TAR) is noted, it means there may be areas of this work in addition to particular designated areas.
4. Where two or more Work Item bubbles are grouped together, it means any or all designated Work Items may be applicable. Coordination of Work Items is Contractor's responsibility.
5. When a Work Item or Detail is listed as incidental, that work is included in pay unit of other work items and does not have a separate price.
6. When a Detail is labeled (FOR REFERENCE ONLY) it provides information about incidental work and does not have a pay unit.

D. Concrete Protection for Reinforcement

1. Minimum concrete cover for reinforcement shall be per ACI, unless noted otherwise.

a.	Slab top reinforcement	1-1/2"
b.	Slab bottom reinforcement	3/4"
c.	Beam top reinforcement	3"
d.	Beam stirrups at sides and bottom of beam	1-1/-2"
e.	Beam stirrups at top of beam	2-1/2"
f.	Column ties	1-1/2"

E. Epoxy Coating

1. Clean by sand blasting all steel to near white and epoxy coat all existing reinforcement, steel, and electrical conduit in repair area to be cast in concrete.
2. All new reinforcing steel shall be fusion bonded epoxy
3. Anchoring system for reinforcing steel shall be Hilti "Hit HY-200", or equivalent.

F. Shoring and Bracing

1. Contractor shall provide all shoring, bracing, sheeting, etc. required for safety and proper execution of work as incidental to work, unless noted otherwise.
2. Contractor is solely responsible to prepare shop drawing for bracing and shoring members. Contractor hired professional engineer, registered in State of Minnesota shall submit sealed calculations and drawings to Engineer for record.

G. Existing Conditions, Services and Utilities

1. Following is incidental to all work. All items that are existing and fixed to parking facility shall be protected or removed, stored, and reinstalled to original integrity, and contractor damaged items shall be repaired or replaced to original integrity at no cost to Owner.
2. Following are fixed items, but not limited to: Light fixtures, exposed electrical conduit, floor drain piping, standpipes, mechanical and electrical lines and utilities, signs, doors, elevators, entrance, vestibules, parking equipment, guardrails, guardrail cables, etc.
3. Contractor shall review all existing conditions to determine all electrical and mechanical services and utilities affected by repair work. Make necessary temporary connections to maintain existing services to all areas of parking garage or other areas affected by work. Contractor shall submit methods and schedule of connections for Owner approval prior to commencement.
4. Contractor shall contact Owner when electrical conduit is encountered unless noted otherwise. Owner to determine if electrical conduit is functioning. If not functioning, Contractor shall remove conduit from patch cavity. If functioning, Contractor shall repair conduit/conductors as needed.

H. Construction Phasing, Sequencing and Traffic Maintenance

1. Work sequence shall be coordinated with Owner's representative.
2. Owner will continue to use parking facilities during rehabilitation. Contractor can take parking spaces out of service at any time and must phase and arrange work so as to maintain access at all times to all parking areas that are not under construction for both vehicles and pedestrians. The quantity of stalls taken out of service shall be coordinated with the Owner.
3. Contractor shall install barricades during all phases of the project between construction areas and parking areas, drive lanes and pedestrian walk areas. Minimum barricades shall be a continuous wall 4' tall. Signs shall be mounted on outside of barricades at 20' O.C. stating "Construction Area Keep Out". Contractor shall meet minimum safety requirements for temporary floor openings, wall openings, stairways and other unprotected edges within construction areas.

I. General Member Repair Notes:

1. Caution: Prestressing tendons are located near surface at spalls and delaminations of tee stems and beams. Contractor shall exercise extreme caution during sawcutting and removals so as not to damage existing tendons or tendon sheaths. Tendons may break with explosive force during removals or when cut. Chipping with 15 lb. hammers shall be used in lieu of sawcutting near shallow tendons.
2. Contractor is solely responsible for:
   a. Training and monitoring his work force concerning safety procedures to be employed in execution of this work and protection of public and property.
   b. Maintaining stability of structure and elements within structure during repair work, including but not limited to installation of shoring and bracing.

J. Abbreviations

APPROX	=	Approximately
BM	=	Beam
BOT	=	Bottom
CIP	=	Cast in Place
CJ	=	Construction Joint/Control Joint
CLR	=	Clearance
CMU	=	Concrete Masonry Unit
COL	=	Column
CONC	=	Concrete
CONT	=	Continuous
CY	=	Cubic Yard
DET	=	Detail
DIA	=	Diameter
EA	=	Each
EJ	=	Expansion Joint
EXIST	=	Existing
FD	=	Floor Drain (Existing)
FIN	=	Finished
FL	=	Floor
GALV	=	Hot Dipped Galvanized
HORIZ	=	Horizontal
INC	=	Incidental
JT	=	Joint
KSI	=	Kip Per Square Inch
LBS	=	Pounds
LF	=	Linear Foot
LMC	=	Latex Modified Concrete
LS	=	Lump Sum
MAX	=	Maximum
MIN	=	Minimum
N/A	=	Not Applicable
NFD	=	New Floor Drain
OC	=	On Center
OH	=	Opposite Hand
P/T	=	Post-tension (ed) (ing)
PSI	=	Pounds Per Square Inch
REINF	=	Reinforcement
REQ'D	=	Required
RWC	=	Rain Water Collector (Horizontal or Vertical)
SF	=	Square Foot
SIM	=	Similar
SOG	=	Slab on Grade
SPEC	=	Specification
Standpipe	=	Existing Manual Dry Standpipe System (Horizontal or Vertical)
SUPP	=	Supported
TAR	=	Typical As Required
TT	=	Traffic Topping
TYP	=	Typical
VERT	=	Vertical
UN or UNO	=	Unless Noted Otherwise
VIF	=	Verify in Field
WI	=	Work Item
WWR	=	Welded Wire Reinforcement

SHEET INDEX

LEGEND

MATCH LINE NUMBER

= EXPANSION JOINT

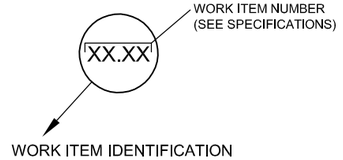
= CONSTRUCTION JOINT

= FLOOR SPALL OR DELAMINATION

= CEILING SPALL OR DELAMINATION

= FLOOR DRAIN

= TRAFFIC TOPPING



WORK ITEM IDENTIFICATION

WALKER
RESTORATION CONSULTANTS
4600 South Highway 100
Suite 424
Minneapolis, MN 55416
952.595.9116 Ph
952.595.9518 Fax
www.walkerrestoration.com

FIRST STREET PARKING
2015
FACILITY RESTORATION
Rochester Minnesota

ISSUE:	DESCRIPTION	DATE	MARK
	CONSTRUCTION DOCUMENT	07.14.2015	

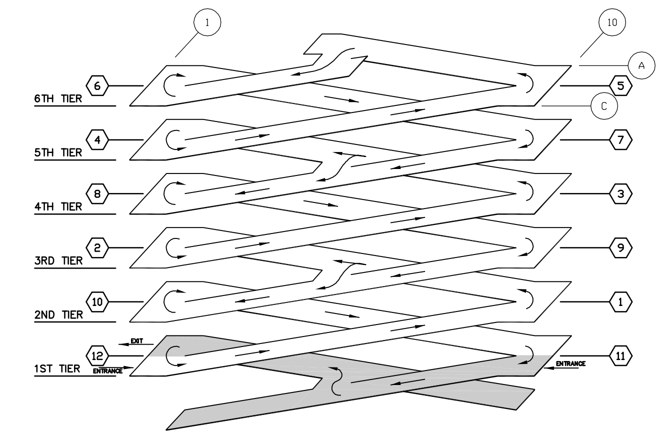
PROJECT NO: 21-4101,00
DRAWN BY: RJL
CHECKED BY: CLS

SHEET TITLE:

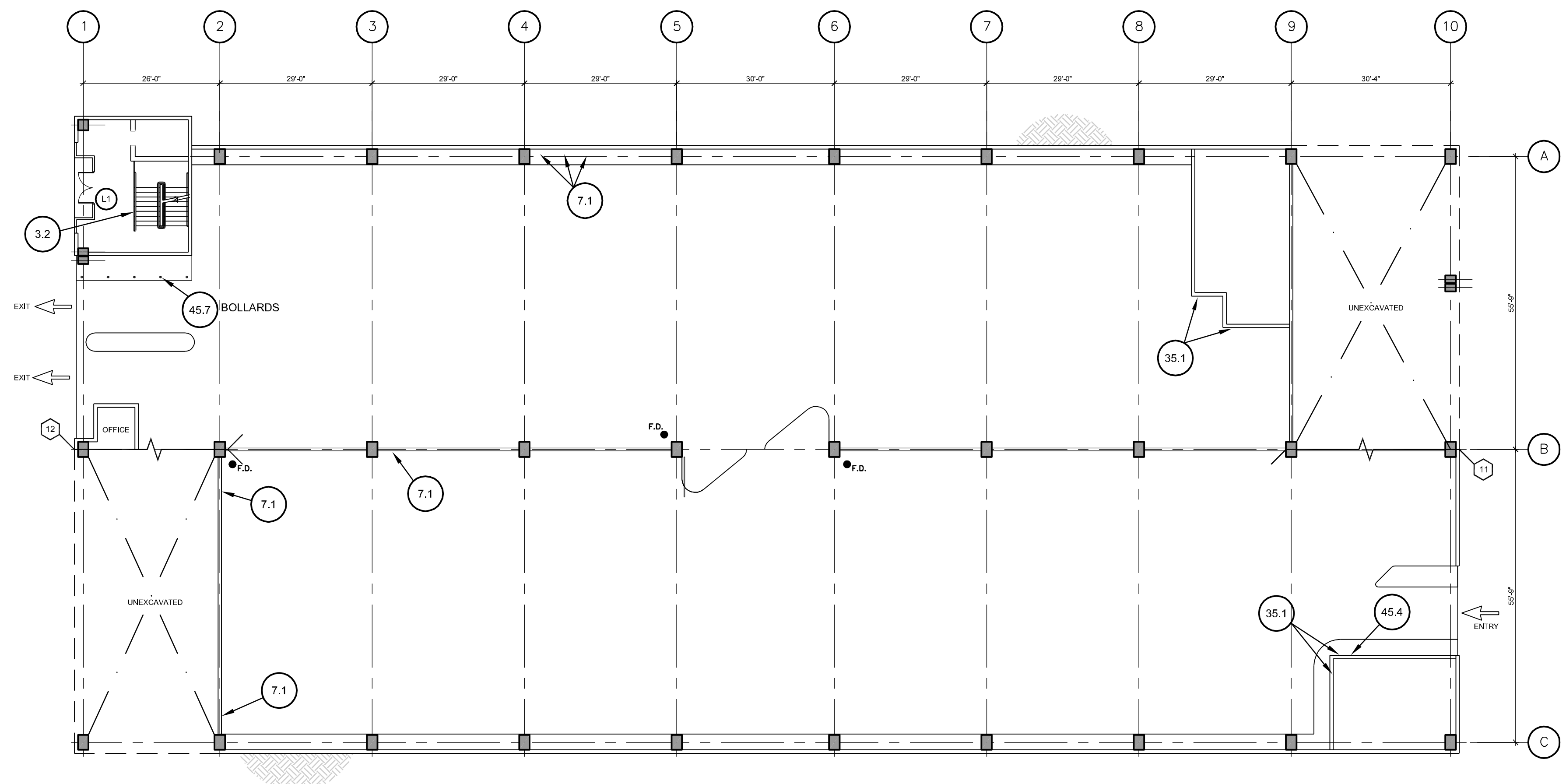
GENERAL NOTES, SHEET INDEX, AND LEGEND

R001

J:\21-4101-00-ROCHESTER_1ST_ST_2015\ACAD\REST\4101-R001.DWG 7/20/2015 1:55:38 PM LEURQUIN, RONALD



KEY PLAN



1 LEVEL 1

NORTH

WALKER
RESTORATION CONSULTANTS
1660 South Highway 100
Suite 424
Minneapolis, MN 55416
952.595.9116 Ph
952.595.9518 Fax
www.walkerrestoration.com

FIRST STREET PARKING 2015 FACILITY RESTORATION

Rochester Minnesota

MARK	DATE	DESCRIPTION
	07.14.2015	CONSTRUCTION DOCUMENT

ISSUE:

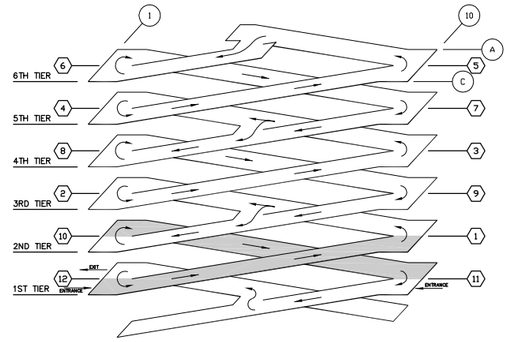
PROJECT NO: 21-4101.00
DRAWN BY: RJL
CHECKED BY: CLS

SHEET TITLE:

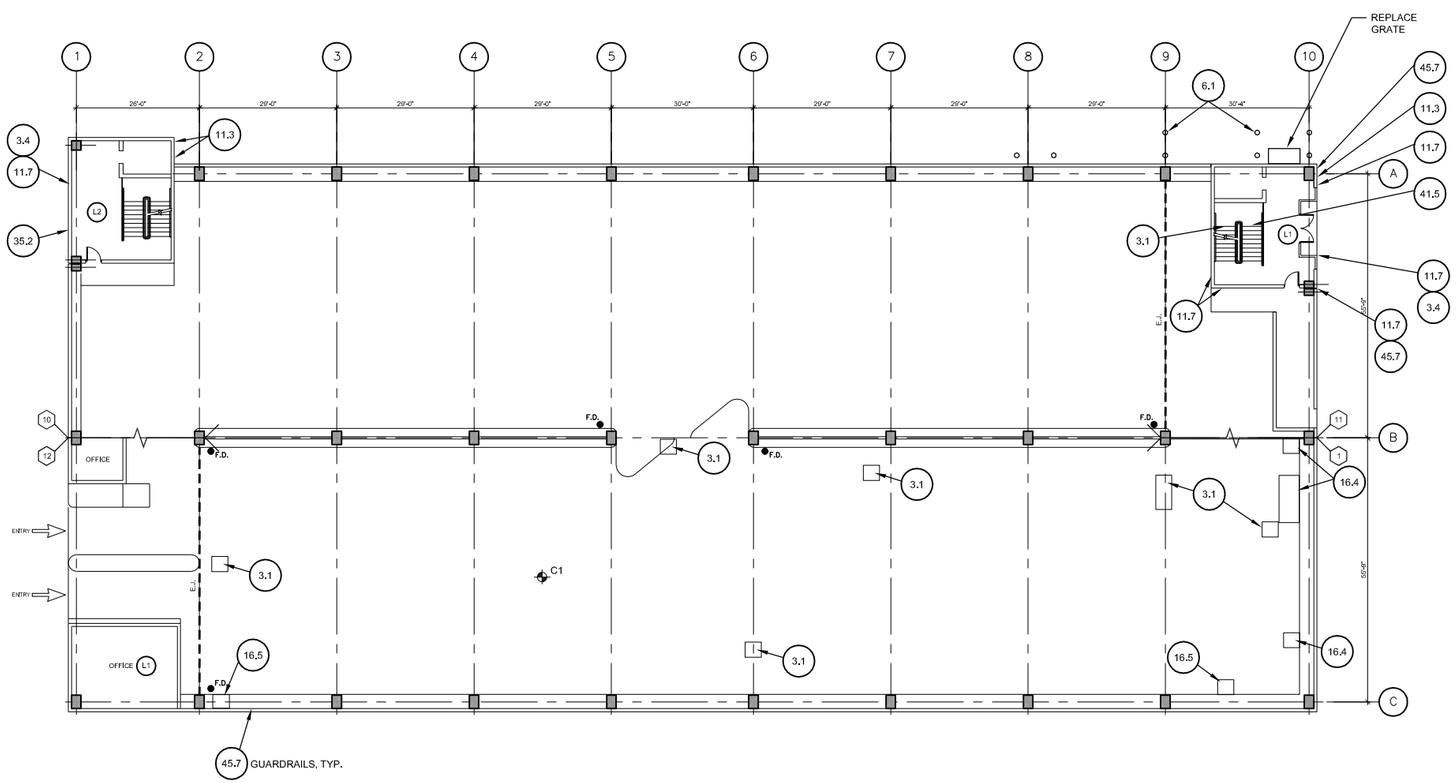
LEVEL 1 PLAN

R101

J:\21-4101-00-ROCHESTER_1ST_ST_2015\ACAD\REST\4101R-101.DWG 7/20/2015 1:55:34 PM LEURQUIN, RONALD



KEY PLAN



1 LEVEL 2

NORTH

WALKER
RESTORATION CONSULTANTS
4600 South Highway 100
Suite 424
Minneapolis, MN 55416
952.595.9116 Ph
952.595.8518 Fax
www.walkerrestoration.com

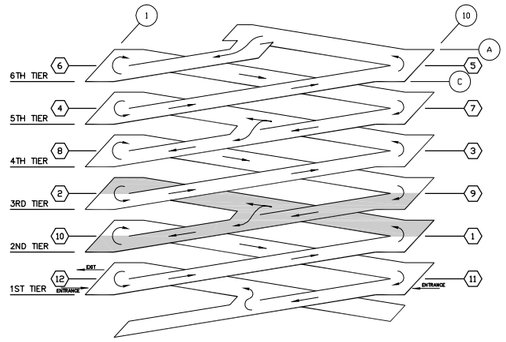
FIRST STREET PARKING
2015
FACILITY RESTORATION
Rochester
Minnesota

ISSUE:	DESCRIPTION	DATE	MARK
	CONSTRUCTION DOCUMENT	07.14.2015	

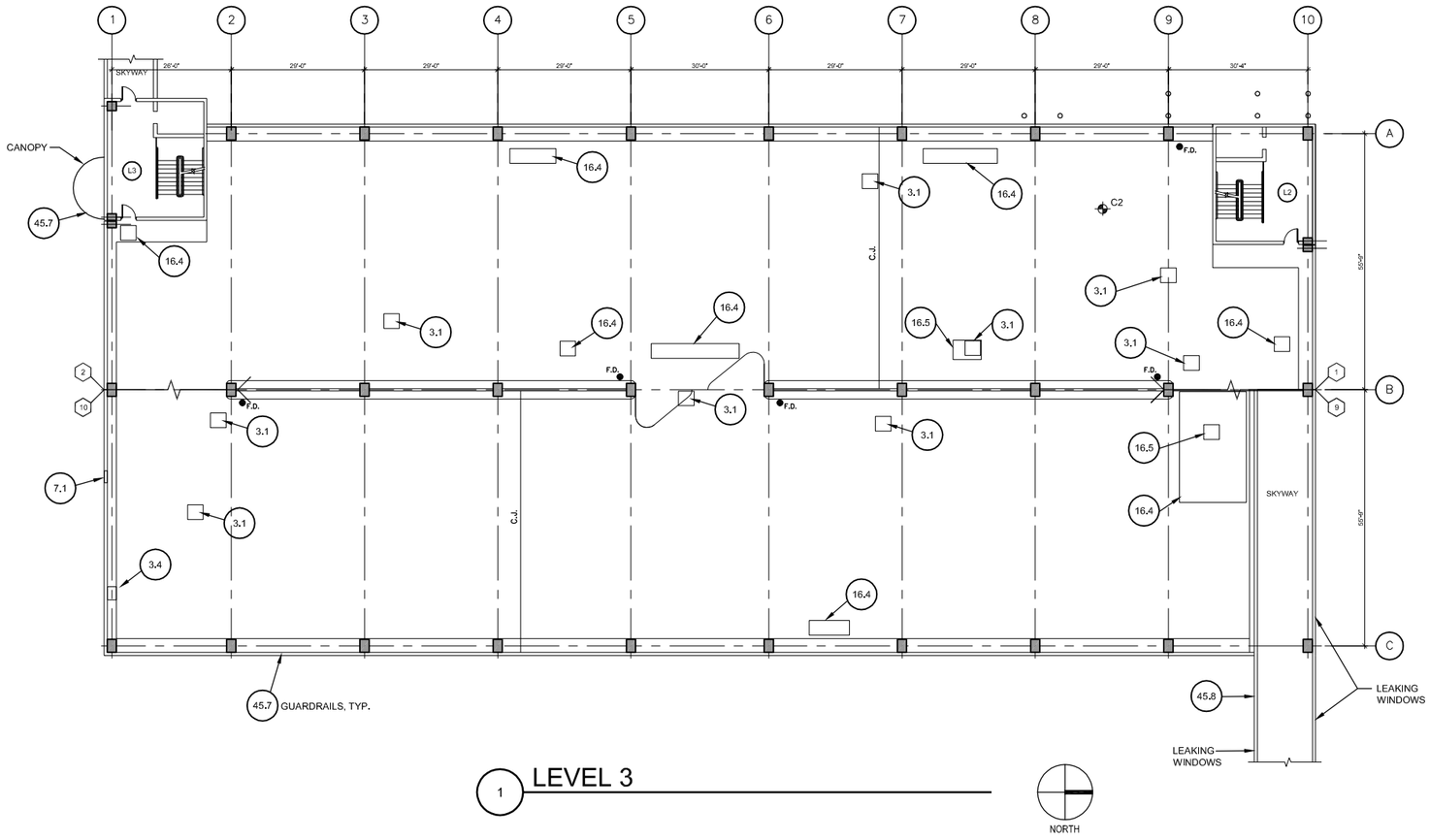
PROJECT NO:	21-4101,00
DRAWN BY:	RJL
CHECKED BY:	CLS

SHEET TITLE:
LEVEL 2
PLAN

R102



KEY PLAN



1 LEVEL 3

NORTH

WALKER
RESTORATION CONSULTANTS
4600 South Highway 100
Suite 424
Minneapolis, MN 55416
952.595.9116 Ph
952.595.9516 Fax
www.walkerrestoration.com

FIRST STREET PARKING
2015
FACILITY RESTORATION
Rochester
Minnesota

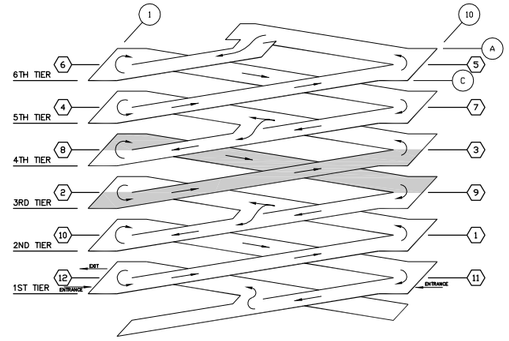
ISSUE:	DESCRIPTION	DATE	MARK
	CONSTRUCTION DOCUMENT	07.14.2015	

PROJECT NO: 21-4101.00
DRAWN BY: RJL
CHECKED BY: CLS

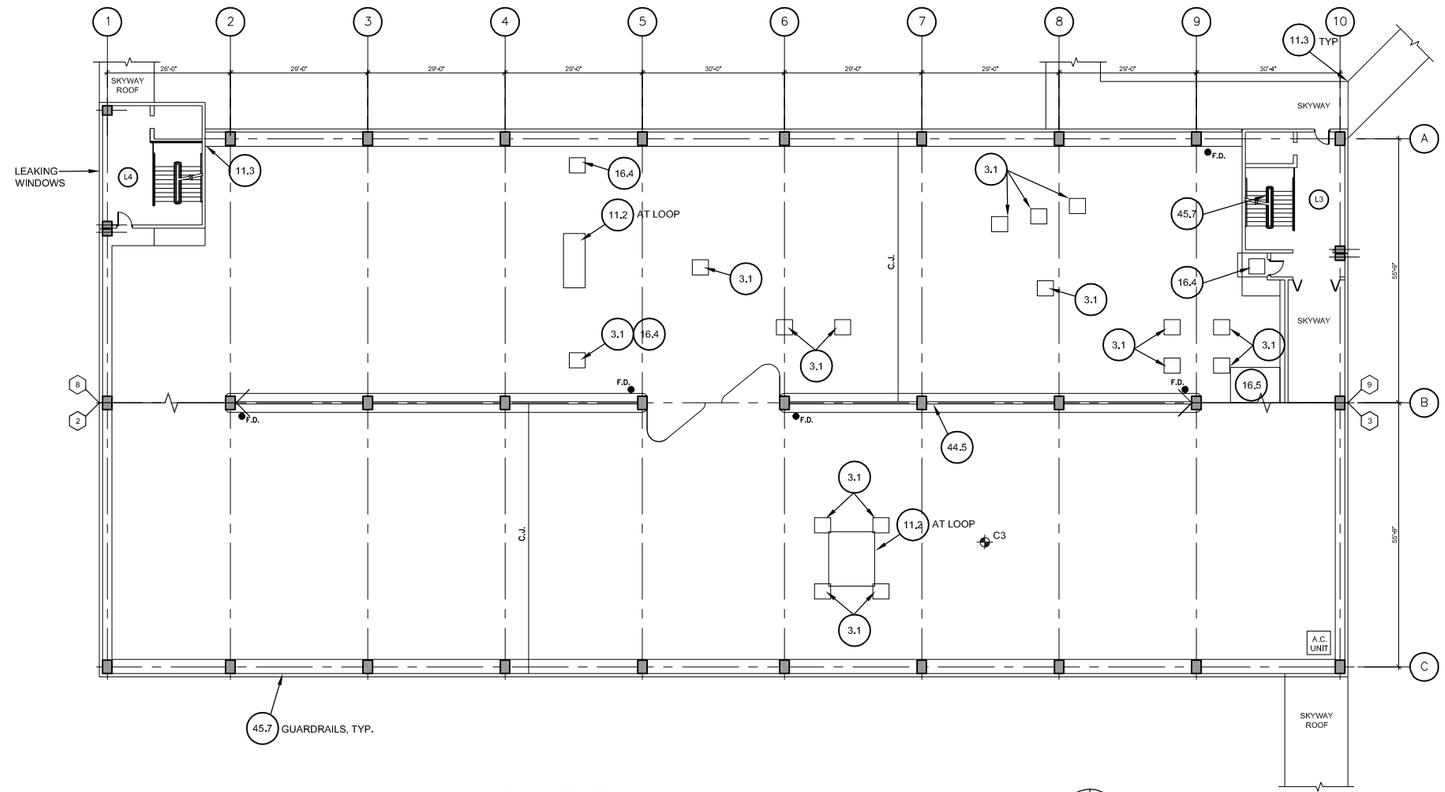
SHEET TITLE:
LEVEL 3
PLAN

R103

J:\21-4101-00-ROCHESTER_1ST_ST_2015\ACAD\REST\4101R-103.DWG 7/20/2015 1:55:25 PM LEURQUIN, RONALD



KEY PLAN



1 LEVEL 4

NORTH

WALKER
RESTORATION CONSULTANTS
4600 South Highway 100
Suite 424
Minneapolis, MN 55416
952.595.9116 Ph
952.595.8516 Fax
www.walkerrestoration.com

FIRST STREET PARKING
2015
FACILITY RESTORATION
Rochester
Minnesota

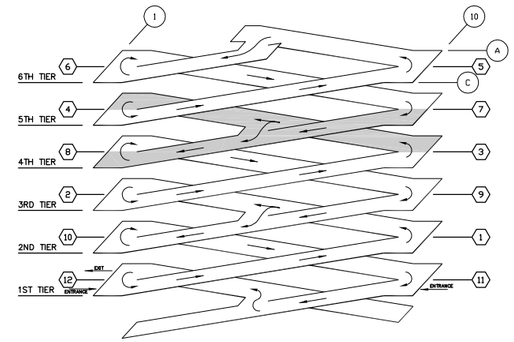
ISSUE:	DESCRIPTION	DATE	MARK
	CONSTRUCTION DOCUMENT	07.14.2015	

PROJECT NO:	21-4101.00
DRAWN BY:	RJL
CHECKED BY:	CLS

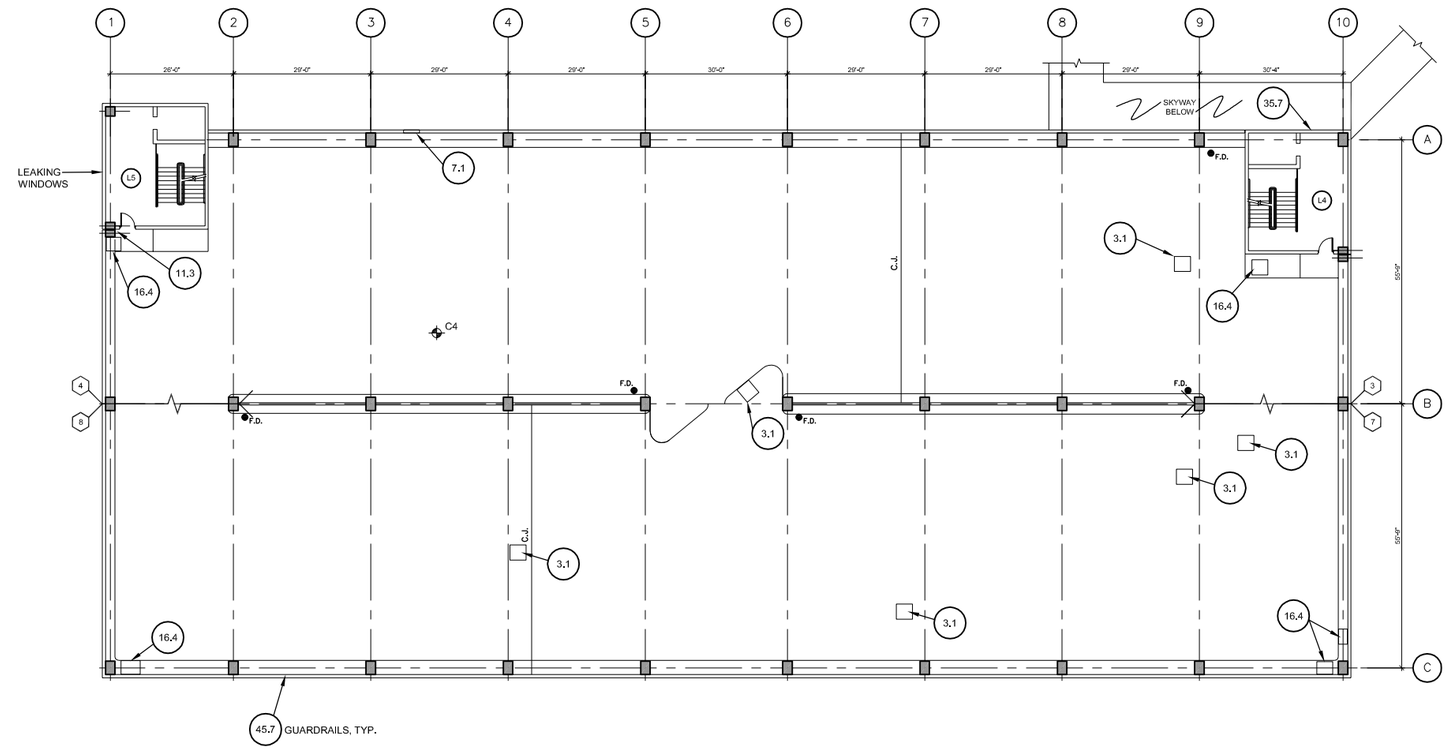
SHEET TITLE:
LEVEL 4
PLAN

R104

J:\21-4101-00-ROCHESTER_1ST_ST_2015\ACAD\REST\4101R-104.DWG 7/20/2015 1:55:20 PM LEUROUIN, RONALD



KEY PLAN



1 LEVEL 5

NORTH

WALKER
RESTORATION CONSULTANTS
4600 South Highway 100
Suite 424
Minneapolis, MN 55416
952.595.9116 Ph
952.595.9518 Fax
www.walkerrestoration.com

FIRST STREET PARKING
2015
FACILITY RESTORATION
Rochester Minnesota

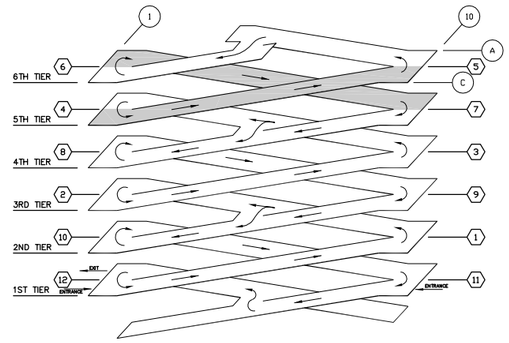
ISSUE:	DESCRIPTION	DATE	MARK
	CONSTRUCTION DOCUMENT	07.14.2015	

PROJECT NO: 21-4101.00
DRAWN BY: RJL
CHECKED BY: CLS

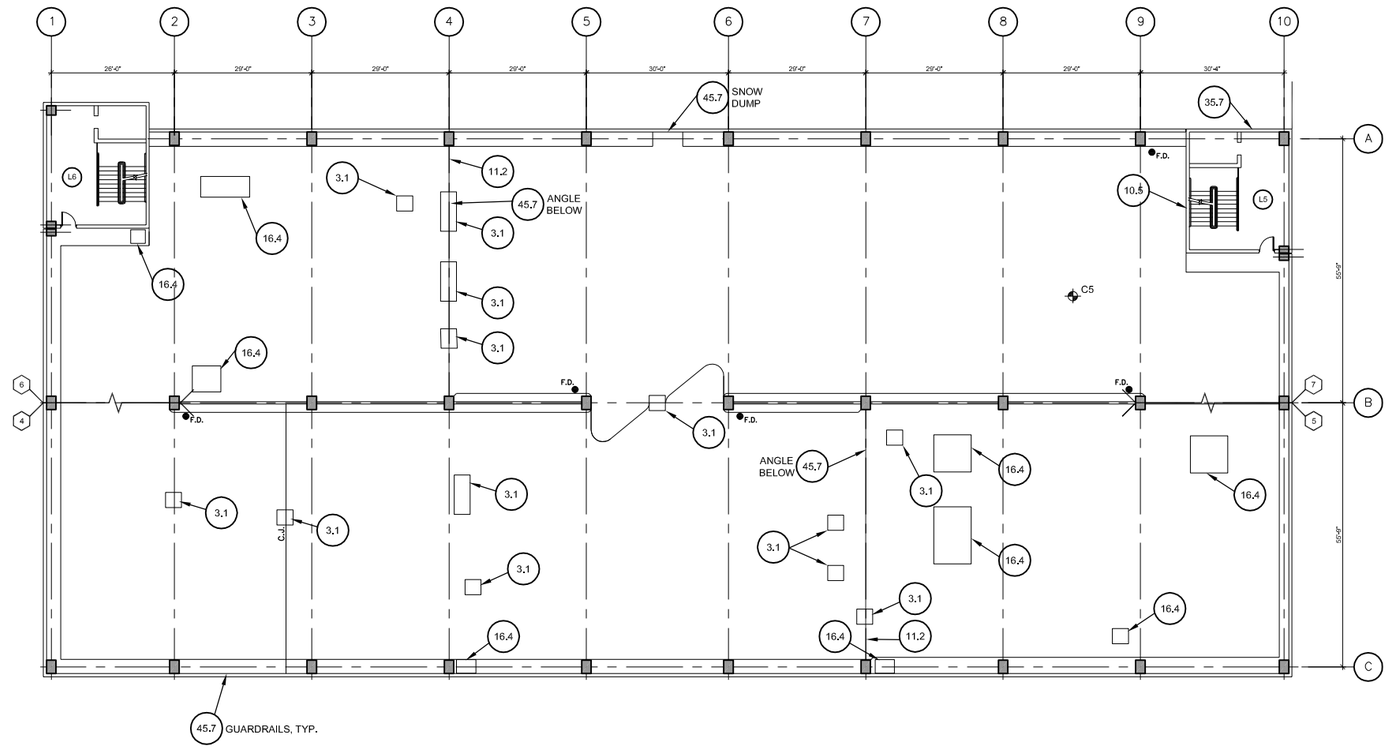
SHEET TITLE:
LEVEL 5
PLAN

R105

J:\21-4101-00-ROCHESTER_1ST_ST_2015\ACAD\REST\4101R-105.DWG 7/20/2015 1:55:16 PM LEUROUIN, RONALD



KEY PLAN



1 LEVEL 6

NORTH

WALKER
RESTORATION CONSULTANTS
4600 South Highway 100
Suite 424
Minneapolis, MN 55416
952.595.9116 Ph
952.595.8518 Fax
www.walkerrestoration.com

FIRST STREET PARKING
2015
FACILITY RESTORATION
Rochester Minnesota

ISSUE:	DESCRIPTION	DATE	MARK
	CONSTRUCTION DOCUMENT	07.14.2015	

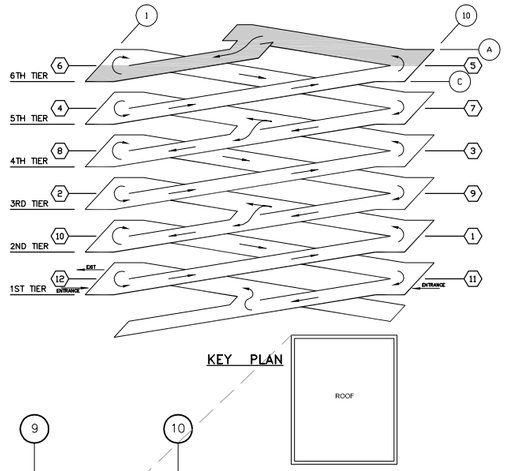
PROJECT NO: 21-4101.00
DRAWN BY: RJL
CHECKED BY: CLS

SHEET TITLE:

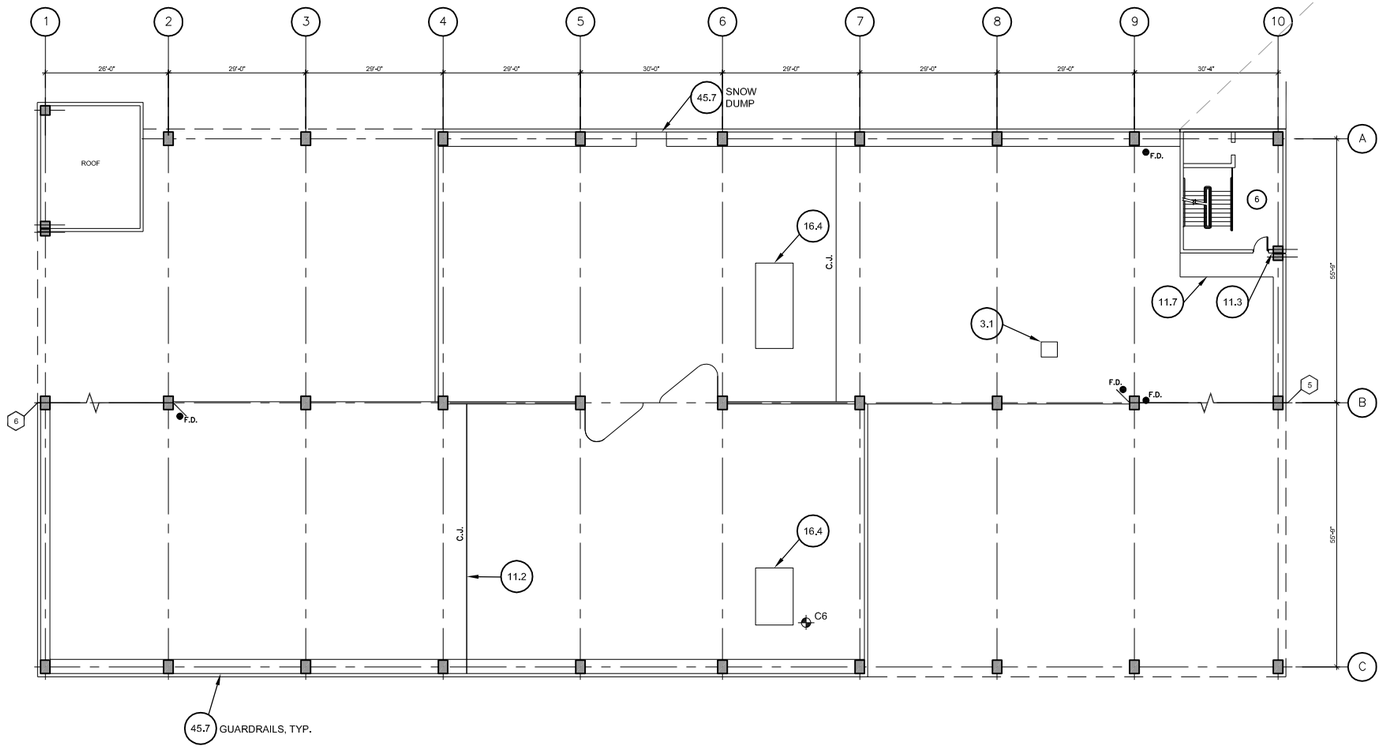
LEVEL 6
PLAN

R106

J:\21-4101-00-ROCHESTER_1ST_ST_2015\ACAD\RESTI4101R-106.DWG 7/20/2015 1:55:11 PM LEUROUIN, RONALD



KEY PLAN



1 LEVEL 7

NORTH

WALKER
RESTORATION CONSULTANTS
4600 South Highway 100
Suite 424
Minneapolis, MN 55416
952.595.9116 Ph
952.595.9516 Fax
www.walkerrestoration.com

FIRST STREET PARKING
2015
FACILITY RESTORATION
Rochester
Minnesota

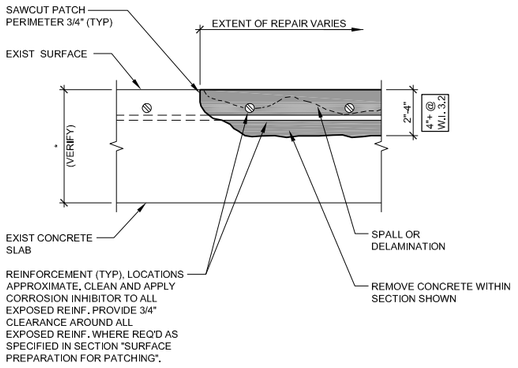
ISSUE:	DESCRIPTION	DATE	MARK
	CONSTRUCTION DOCUMENT	07.14.2015	

PROJECT NO: 21-4101.00
DRAWN BY: RJL
CHECKED BY: CLS

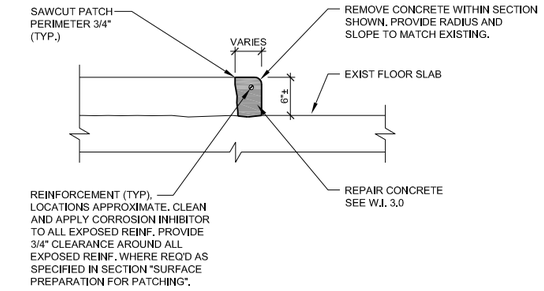
SHEET TITLE:
LEVEL 7
PLAN

R107

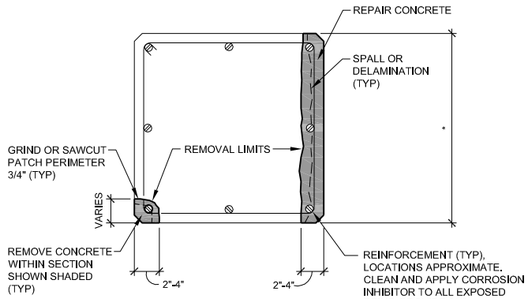
J:\21-4101-00-ROCHESTER_1ST_ST_2015\ACAD\REST\4101R-107.DWG 7/20/2015 1:55:01 PM LEURQUIN, RONALD



3.1 3.2 FLOOR REPAIR - PARTIAL DEPTH

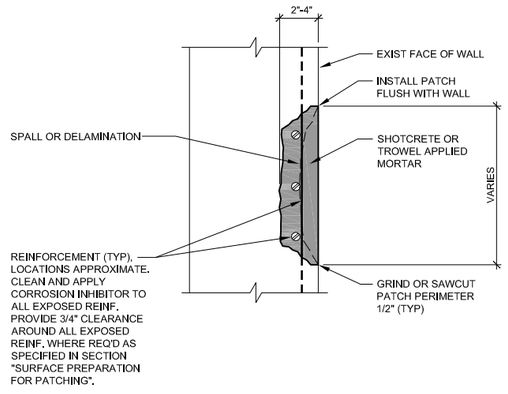


3.4 FLOOR REPAIR-CURBS/WALKS

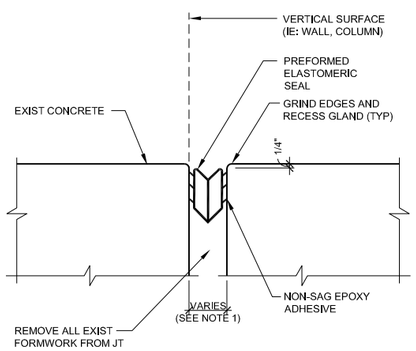


NOTES:
1. COLUMN TIES WHICH HAVE LOST MORE THAN 15% OF ORIGINAL CROSS ECTIONAL AREA SHALL BE SUPPLEMENTED AS ENGINEER DIRECTS.
2. NUMBER AND LOCATION OF REINFORCEMENT SHOWN MAY DIFFER FROM ACTUAL FIELD CONDITIONS.

6.1 COLUMN REPAIR-PARTIAL DEPTH

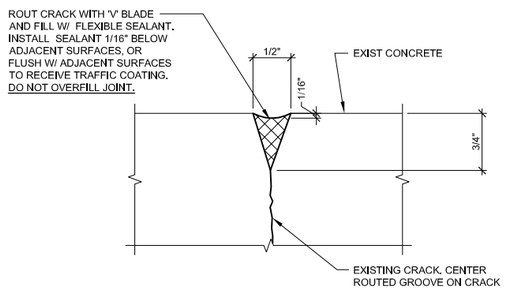


7.1 WALL REPAIR-PARTIAL DEPTH

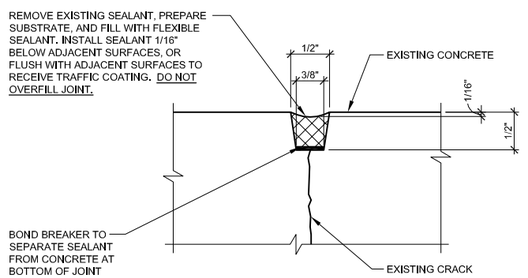


NOTES:
1. CONTRACTOR SHALL, WITH MANUFACTURER, VERIFY FIELD INSTALLATION WIDTH BASED ON TEMPERATURE CONDITIONS. TOTAL ANTICIPATED JOINT MOVEMENT =" ".
2. ALL INTERSECTIONS AND 90° CORNERS TO BE FIELD FABRICATED PER MANUFACTURER'S DETAILS AND WRITTEN INSTRUCTIONS.

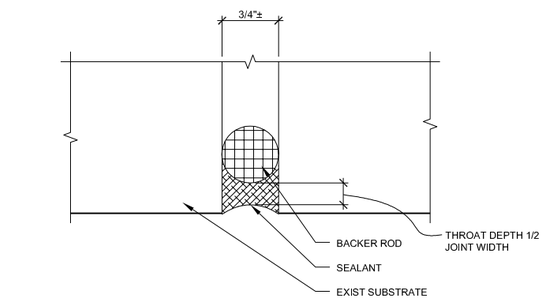
10.5 EXPANSION JOINT-ADHERED



11.1 ROUT & SEAL RANDOM CRACKS (CRACKS 0.030" OR GREATER)
(INCIDENTAL TO W.J. 16.1, 16.4, 16.5)



11.2 JOINT SEALANT REPAIR



NOTES:
1. CLEAN JOINT SUBSTRATE BY SAND & AIR BLASTING.
2. PREPARE AND PRIME SEALANT CAVITY & INSTALL SEALANT ACCORDING TO SEALANT MANUFACTURER'S RECOMMENDATIONS.

11.3 VERTICAL JOINT SEALANT

WALKER
RESTORATION CONSULTANTS
4600 South Highway 100
Suite 424
Minneapolis, MN 55416
952.595.9116 Ph
952.595.9518 Fax
www.walkerrestoration.com

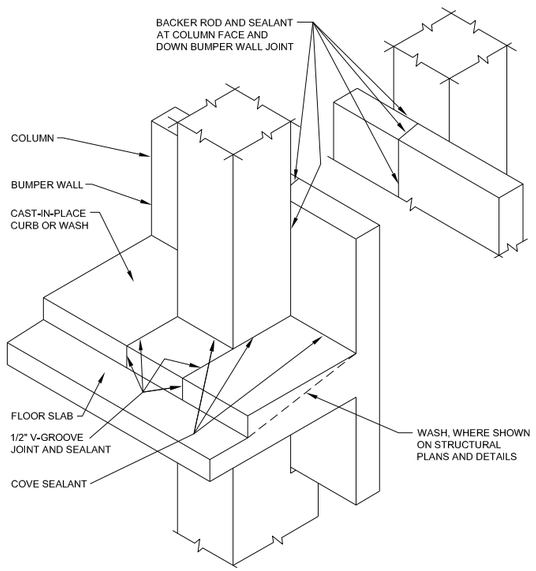
FIRST STREET PARKING
2015
FACILITY RESTORATION
Rochester Minnesota

ISSUE:	DESCRIPTION	DATE	MARK
	CONSTRUCTION DOCUMENT	07.14.2015	

PROJECT NO: 21-4101.00
DRAWN BY: LPM
CHECKED BY: MF/CLS

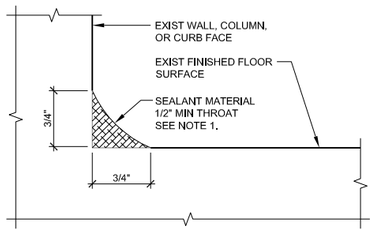
SHEET TITLE:
REPAIR DETAILS

R501



INSIDE FACE OF WALL/CURB/COLUMN SEALANT TYPICAL AT LOWER LEVEL

11.3.1

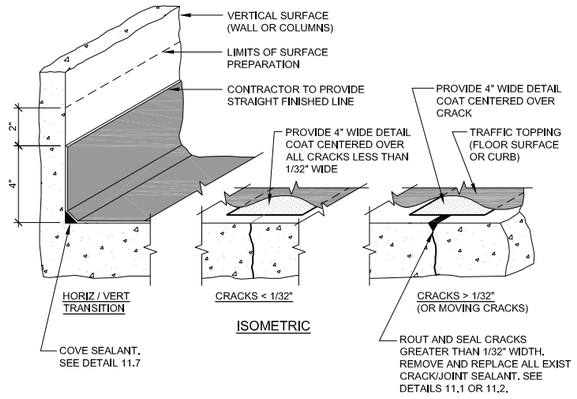


NOTE:
1. REMOVE EXISTING COVE SEALANT MATERIAL IF PRESENT. PREPARE SURFACE PER SPECIFICATIONS.

COVE SEALANT

(INCIDENTAL TO W.I. 16.1, 16.4, 16.5)

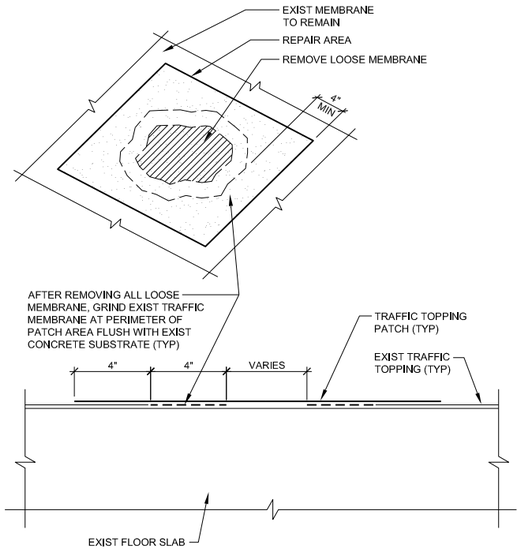
11.7



NOTE:
1. QUANTITIES BASED ON HORIZONTAL APPLICATION AREA. VERTICAL DETAILING, ADDITIONAL DETAIL COAT OVER CRACKS, ROUTING AND SEALING CRACKS, INSTALLATION OF COVE SEALANT, AND REMOVAL AND REPLACEMENT OF EXISTING SEALANTS ARE INCIDENTAL TO THIS WORK.

TRAFFIC TOPPING-VEHICULAR/RECOAT

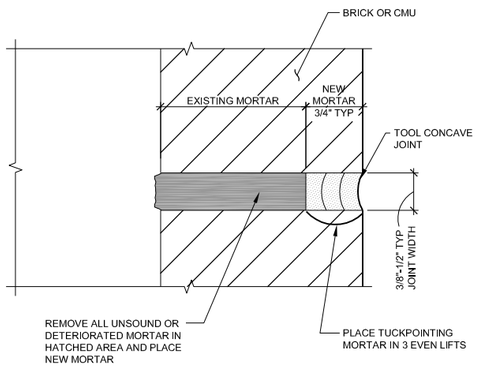
16.0



NOTE:
1. COORDINATE TRAFFIC TOPPING REPAIR WITH W.I. 16.4, TRAFFIC TOPPING - RECOAT.

TRAFFIC MEMBRANE-REPAIR

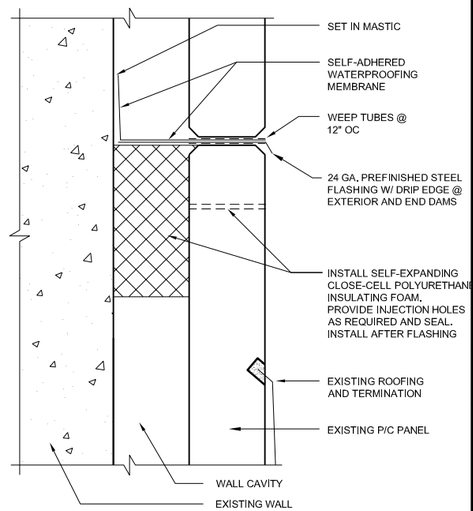
16.0.1



NOTES:
1. REMOVE LOOSE MATERIAL FROM JOINT.
2. FILL AND VOIDS IN JOINT BEYOND POINTING WORK DEPTH.
3. GRIND BRICK SURFACES CLEAN OF EXISTING MORTAR. DO NOT DAMAGE ADJACENT MASONRY.
4. INSTALL MORTAR IN THREE LIFTS, COMPACTING EACH LIFT.
5. TOOL MORTAR JOINT CONCAVE.

TUCKPOINTING

35.1



THROUGH WALL FLASHING

35.7

WALKER
RESTORATION CONSULTANTS
485 South Highway 100
Suite 424
Minneapolis, MN 55416
952.595.9116 Ph
952.595.9518 Fax
www.walkerrestoration.com

FIRST STREET PARKING
2015
FACILITY RESTORATION
Rochester Minnesota

MARK	DATE	DESCRIPTION
	07.14.2015	CONSTRUCTION DOCUMENT

ISSUE:

PROJECT NO: 21-4101.00
DRAWN BY: LPM
CHECKED BY: MF/CLS

SHEET TITLE:
REPAIR DETAILS

R502

J:\21-4101-00-ROCHESTER_1ST_ST_2015\ACAD\REST\4101R-501.DWG 7/20/2015 4:32:29 PM LEURQUIN, RONALD